

*Practical Materia  
Medica of the Medieval  
Eastern Mediterranean  
According to the  
Cairo Genizah*



BY  
EFRAIM LEV  
AND ZOHAR AMAR

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Practical *Materia Medica* of the Medieval  
Eastern Mediterranean According to the  
Cairo Genizah

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Practical *Materia Medica*  
of the Medieval Eastern  
Mediterranean According  
to the Cairo Genizah

By  
Efraim Lev and Zohar Amar



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## PREFACE

There is much information on Eastern medieval medical practices and the use of medicinal substances, which is based mainly upon the wide literature written in this field. This body of literature deals with a wide variety of subjects, from general works on medical doctrines and theories, codes of maintaining health, treating different diseases to the preparation of medication and more.

The vast majority of these books was written by learned and usually well trained, educated and known physicians in concrete and well organized forms, and were meant to be practical and theoretical teaching tools as well as reference books for practitioners.

In these works, the optimal medicinal substances were mentioned, out of an enormous inventory from all over the Old World, as ingredients in the proposed medicines. However, it seems that so far there has been no wide and deep examination, which tries to assess how much of this body of data regarding the medicinal substances was really used.

The goal of our study is to try to bridge the gap between the theoretical and the practical information, as well as comparing uses of medicinal substances according to the vast documentation dealing with medicine in the Cairo Genizah. We strongly believe that the large number of fragments dealing with medical issues, which are mainly related to the Jewish community of medieval Cairo, truly reflect the wide field of medicine in most of the eastern communities in particular and the Mediterranean society in general.

The Genizah supplies us with reliable, direct and authentic information on the diseases from which the members of the community suffered, allows us to reconstruct the inventory of medicinal substances which were sold in the pharmacies and moreover, to determine the frequencies of their uses in prescriptions and their usefulness. Doing this, our study contributes much to the knowledge regarding the medieval daily life, the material culture, economy and trade among these communities.

This book is the outcome of five intensive years of research (based on a decade of study of the medicine and the *materia medica* of the Levant), which includes the sorting of thousands of manuscripts and examining hundreds of original fragments, most of which are found at the “Genizah capital”—the Taylor-Schechter Collection at Cambridge University Library. It is our pleasure to thank Prof. Stefan Reif, the former director of the Genizah Research Unit at Cambridge University

Library for his friendly attitude, encouragement and support. We also would like to express our gratitude to his team: Dr. Avihai Shvitiel, Dr. Fredrich Niessen, Dr. Ben Outhwaite, Dr. Rebecca Jefferson, Ellis Weinberger, Dr. Leigh Chipman, Shulie Reif and Sara Sykes. We would like to express our respect for the late Dr. Haskell Isaacs, who paved the road for the research of the history of medicine in the Cairo Genizah, and his wife Ruth for her support.

This book would have not come to light without the support of the following institutions: St. John's College, Cambridge, England for their support and hospitality during years of research; Research Authority, University of Haifa, Israel for their financial support. A generous gift from the Kohn Foundation, made possible by the kindness of Dr. Ralph and Mrs Zahava Kohn, contributed towards the preparation of the research in this volume.

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This book is dedicated to our families, this time mainly to our children: Hagar, Amitay, Avigail and Ilay Lev, and Shaked, Yadin, Zur, Mevaseret, Matania, and Avigail Amar and to our spouses Michal Lev and Tamar Amar.

Efraim Lev  
Zichron Yaakov

Zohar Amar  
Neve Tsuf

2007

PART A

INTRODUCTION



## CHAPTER ONE

### INTRODUCTION

#### *The Genizah and its different collections*

A thousand years ago, one of the most important centres of Jewry the world over, and particularly in the East, was the community of Old Cairo (Fustat). This community had close connections with the Jewish communities of Babylon, Palestine, Spain, Sicily, North African (Morocco, Algeria, and Tunisia), Spain, India, Yemen, and others. The Fustat community was a centre of considerable social, economic, and religious activity. The Palestinian Jews of Fustat worshipped in the Ben Ezra synagogue and it was one of the rooms in their synagogue which was utilized as a “Genizah”, or depository, from about the tenth to the nineteenth century. In accordance with Jewish religious practice, sacred books which were no longer to be used were not idly discarded, but were committed to such a Genizah or buried. The community in Fustat made full use of the first option and deposited not only sacred works such as the Bible and rabbinic literature and liturgies, but also sectarian literature, palimpsests, *responsa*, poetry, and documents of all kinds. In fact, almost every written piece that passed through its members’ hands, on vellum or paper, printed or manuscript, early or late, scholarly research or children’s reading exercises, was consigned to the Genizah. The extraordinary circumstance of its preservation for this long period against the ravages of time and decay was due to the exceptionally dry climate of Egypt.

The existence of the Cairo Genizah was known to European scholars. Some even visited it, but superstitious tales prevented them from touching or removing any fragment. By the nineteenth century the “spell was broken” and manuscripts were bought from the synagogue officials and guards. The fragments slowly reached the hands of collectors and came to the attention of scholars in Russia, America, and Europe. Soon after that different academic institutes and libraries purchased manuscripts and assembled their own collections.<sup>1</sup>

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<sup>1</sup> Reif, *Guide*, pp. 1–2; Richler, pp. 60–164; Reif, *Jewish*, pp. 1–22.

The main collections are as follows: Cambridge University Library (150,000 items), Manchester, John Rylands University Library (10,000, mostly small scraps), Leningrad, Saltykov-Schedrin Public Library (1,200 and thousands in the Firkovich collection), Oxford, Bodleian Library (5,000), London, British Library (5,000), Cambridge, Mosseri family collection (4,000), Paris, Alliance Israélite Universelle (3,500), Cambridge, Westminster College (2,000), Strasbourg, Bibliothèque nationale et universitaire (1,000), Budapest, Academy of Science (650), Philadelphia, Annenberg Research Institute (400), Jerusalem, Jewish National and University Library (300), Cincinnati, Hebrew Union College (250), Vienna (150), and Washington, Birmingham, Frankfurt, Berlin, and a few private collections (less than 50 each).<sup>2</sup>

The Taylor-Schechter Genizah Collection at Cambridge University Library owes its existence to Dr. Solomon Schechter (1847–1915) and Dr. Charles Taylor (1881–1908). They were responsible for recovering the majority of Genizah manuscripts from Cairo in 1896. The collection was offered to the Cambridge University Library Syndicate with certain conditions in 1898.

This collection is known as the Taylor-Schechter Genizah Collection (T-S for short). Other smaller collections of Genizah manuscripts had been purchased or come into the possession of the Library before Schechter's hoard. In 1973 the Genizah Research Unit was established, and since then it has conducted numerous research projects.

### *History of research*

The Genizah's many collections have been studied ever since it was discovered by Western scholars,<sup>3</sup> individual fragments have been published, catalogues written,<sup>4</sup> and much research focusing on a wide variety of matters has yielded a wealth of articles and books.

Among the main fields that have been studied are various religious and biblical subjects, Jewish law, education, poetry, social life, trade, communal organization, and so on. The importance of the Genizah for the research of the medieval Mediterranean communities, supplying

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<sup>2</sup> Richler, pp. 63–64.

<sup>3</sup> Reif, *Jewish*.

<sup>4</sup> E.g., Gottheil & Worrell; Reif, *Published*; Helper; Jefferson & Hunter.

information on almost every aspect of life, is demonstrated by Goitein,<sup>5</sup> Gil,<sup>6</sup> Ben-Sasson<sup>7</sup> and others.

Medical issues in the Genizah have been researched only as part of other subjects such as the different professional classes of the Jewish community in Old Cairo. A number of scholars have dealt with this subject-matter, such as Goitein,<sup>8</sup> Baker,<sup>9</sup> Fenton,<sup>10</sup> Dietrich,<sup>11</sup> Cohen,<sup>12</sup> Dvorjetski,<sup>13</sup> and especially Isaacs.<sup>14</sup>

On the importance and the potential of research into the medical aspects of the Genizah documents Goitein wrote in 1963: "Only a special study can do justice to this subject";<sup>15</sup> in 1967 he reiterated, "With regard to... medical and culinary plants, there is enough material for a Ph.D. dissertation on each", and added in 1971 that "these prescriptions have to be examined by experts in the history of medicine".<sup>16</sup> Fenton in 1980 underlined the same need for focused research: the Genizah fragments, "although of considerable interest for the history of medicine, have received relatively little attention".<sup>17</sup> One early study on medicinal materials in Muslim Egypt was conducted by Dietrich and published in 1954; this scholarly work was based on one manuscript replete with information on trade in medicinal substances.<sup>18</sup> A few works have been published since, usually focusing on one subject, or even important single manuscripts which were studied in detail,<sup>19</sup> for example, by Baker<sup>20</sup> and by Isaacs.<sup>21</sup>

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<sup>5</sup> Goitein, *Jewry*; Goitein, *Society*.

<sup>6</sup> Gil; Gil, *Kingdom*.

<sup>7</sup> Ben Sasson.

<sup>8</sup> Goitein, *Medical*; Goitein, *Society*, I, p. 267, where Goitein published a few prescriptions.

<sup>9</sup> Baker, *Islamic*.

<sup>10</sup> Fenton.

<sup>11</sup> Dietrich, *Egypt*.

<sup>12</sup> Cohen, *Life*.

<sup>13</sup> Dvorjetski, *Genizah*.

<sup>14</sup> Isaacs, *Impact*; Isaacs, *Medieval*; Isaacs & Baker.

<sup>15</sup> Goitein, *Medical*.

<sup>16</sup> Goitein, *Society*, I, p. 210; II, p. 253.

<sup>17</sup> Fenton.

<sup>18</sup> Dietrich, *Egypt*.

<sup>19</sup> E.g., Dvorjetski, *Genizah*.

<sup>20</sup> Baker, *Islamic*.

<sup>21</sup> Isaacs, *Medieval*.



In addition, the medical profession has been studied in works on the Genizah in general, and on the life of the Jewish communities and societies in the Mediterranean.<sup>22</sup> Medicine as a foremost subject in the Genizah has been given due attention only in the last few years, with the publication of a catalogue of medical and para-medical manuscripts in the Cambridge Genizah Collection by Isaacs and Baker.<sup>23</sup> Short descriptions are given of 1616 fragments, about one quarter of which concern *materia medica*. However, the book hardly discusses or analyses the evidence. The compilers close their introduction to the catalogue as follows: “Much more could be said of the Genizah medical material, but enough basic information has been provided to encourage future scholars with an interest in such matters to pursue further investigation.”<sup>24</sup>

Recent catalogues<sup>25</sup> and further research on the T-S collection have provided information on more than 150 fragments referring to medicine in general and *materia medica* in particular. We hope this vital information will soon be published.<sup>26</sup>

In keeping with the above, this book attempts to contribute to the following categories: rearrangement and a fresh classification of the medical fragments, more precise identification of the *materia medica*, as well as reconstruction of the inventory of practical *materia medica* in medieval Cairo. These matters will paint a better picture and provide a wider perspective of the practical daily medicine of the Genizah people.

Our research project is based mainly on the T-S Genizah collection at Cambridge. All other collections are much smaller and some have not yet been catalogued. To date, no specialist catalogue of medical materials in the other Genizah collections has been published. A survey of the collections at the British Library, at the Bodleian Library at Oxford, and at the Hebrew University in Jerusalem shows that these contain very few Genizah fragments relating to medicine, in most cases parts of books.<sup>27</sup>

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<sup>22</sup> Goitein, *Society*, II, pp. 240–272.

<sup>23</sup> Isaacs & Baker.

<sup>24</sup> Isaacs & Baker, p. xvi.

<sup>25</sup> Baker & Polliack; Shvitiel & Niessen.

<sup>26</sup> Niessen & Lev.

<sup>27</sup> See, e.g., Leveen et al.

*The field of medicine according to the Genizah*

In their work, Isaacs and Baker classified the medical materials found in the Genizah into five categories,<sup>28</sup> four of which contain information about *materia medica*:

- a. Fragments referring to medicine proper, including treatment.
- b. Descriptions of simple drugs, methods of preparing potions, pills, ointments etc., pharmacopoeias and the art of pharmacy.
- c. Household remedies.
- d. Quasi-medical subjects.

This classification is sound, and is followed in this book. Isaacs and Baker's catalogue and the works by Goitein and Gil provided the inspiration for this present excursion into the world of medical and pharmaceutical data found in the wealth of Genizah manuscripts.

The literature on medicine in medieval Muslim countries in general<sup>29</sup> and in Egypt particularly is vast and detailed.<sup>30</sup> In this work we concentrate on the contribution of the Genizah fragments to research in the field of medicine and its different aspects, mainly the practical uses of *materia medica*.

*Medicine and medical practitioners in the Medieval Middle East*

*Physicians*

Many medieval Egyptian Jews chose the medical profession for a wide range of reasons. That a large number of Jews engaged in the medical profession in Egypt and other Muslim territories emerges from other historical sources as well, mainly the books by medieval biographers and historians of medicine such as Ibn Abī Uṣaybi'a.<sup>31</sup> This writer mentions more than fifteen Jewish practitioners he met or knew of in Cairo in his time and before.

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<sup>28</sup> Isaacs & Baker p. ix. The fifth is miscellaneous fragments dealing with social and ethical aspects of the medical profession.

<sup>29</sup> Ullman, *Medicine*; Levey, *Pharmacology*; Campbell, Conrad, *Medicine*; Hermann, Arnolad & Guillaumer; Savage-Smith, *Medicine*.

<sup>30</sup> See, e.g., Dols, *Medieval*.

<sup>31</sup> Ibn Abī Uṣaybi'a.

So far, sifting through Genizah fragments as part of an ongoing long-term project<sup>32</sup> has yielded the names of more than fifty physicians. Of several explanations for this phenomenon, Goitein's is still convincing and relevant, based as it is on his deep knowledge and understanding of medieval Mediterranean society, particularly its Jewish sector.

Goitein explains the phenomenon of Jewish predominance in medicine not as the continuation of the pre-Islamic tradition but as a contemporary development owing to the revival of the Greek sciences in Islam on the one hand and the efflorescence of trade with India and the Far East on the other. In his opinion medicine and pharmaceuticals then experienced unprecedented exuberance and became almost new professions.<sup>33</sup>

Most of the fifty Jewish physicians found to date in the fragments lived and practised medicine in Cairo, with a few in Alexandria and several small cities in Egypt, between the 11th and the 13th century. Their titles (all signifying 'doctor'), according to the Genizah fragments, were *al-mutaṭabbib* (e.g., 'Īsā b. 'Alī al-Mutaṭabbib;<sup>34</sup> 'Abdallāh Yaftūḥ b. Yusūf al-Isrā'īlī al-Mutaṭabbib),<sup>35</sup> *al-ṭabīb* (e.g., Abū al-'Alā' b. Yusūf al-Ṭabīb;<sup>36</sup> Hārūn b. Sa'adya al-Ṭabīb),<sup>37</sup> *ha-rofe* (e.g., Shlomo ha-Zaken ha-Rofe,<sup>38</sup> Aaron ben Yeshu'a ha-Rofeh),<sup>39</sup> and *al-ḥakīm* (e.g., Abū Ya'qūb al-Ḥakīm).<sup>40</sup>

In few cases titles reflect other communal positions the physician held, such as head of community: *nagid* (e.g., Abū al-Faḍl Mevorach b. Sa'adya;<sup>41</sup> Judah Mevorakh b. Sa'adya (Abū Zikri));<sup>42</sup> prominence in the community: *parnas* (e.g., Yosef ha-Parnas ha-Rofe);<sup>43</sup> or physician and judge (e.g., Aaron b. Yeshu'a Ibn al-'Ammānī ha-Rofe;<sup>44</sup> Moses b.

<sup>32</sup> Lev, Work.

<sup>33</sup> Goitein, Society, II, p. 266.

<sup>34</sup> T-S AS 119.315v.

<sup>35</sup> T-S Ar.39.336r.

<sup>36</sup> T-S AS 152.218.

<sup>37</sup> T-S 13J5.1.

<sup>38</sup> T-S Or.1080.J.7.

<sup>39</sup> T-S 10J26.2r.

<sup>40</sup> T-S 13J34.5.

<sup>41</sup> T-S 13J8.1.

<sup>42</sup> T-S 20.76; ENA NS 18.24.

<sup>43</sup> T-S 10J7.8.

<sup>44</sup> T-S 13J3.4; T-S 13J14, f.25.

Maimon—Maimonides).<sup>45</sup> Maimonides was called also *ra'īs al-yahūd*, which according to Goitein means official leader of the Jews.<sup>46</sup>

For some of them we even have information on their specialization: eye doctors (e.g., Makārim b. Ishāq b. Makārim),<sup>47</sup> a wound specialist (Abū al-Faraj b. al-Kallām),<sup>48</sup> and a physician who worked in a hospital (Sulaymān b. Mūsā).<sup>49</sup>

As noted, most of the physicians worked privately in Cairo<sup>50</sup> or Alexandria (Abū al-Futūḥ,<sup>51</sup> Aharon b. Şedaqa b. Aaron ha-Rofe al-'Ammānī,<sup>52</sup> Ben Şadaqa),<sup>53</sup> others pursued their career in small villages,<sup>54</sup> some practised in hospitals (Abraham b. Moses b. Maimon)<sup>55</sup> and a select few in rulers' courts (Moses b. Maimon; al-Shaykh al-Muwaffaq Ibn Jumay').<sup>56</sup>

The Genizah records constitute historical evidence supporting Maimonides' account of the great number of physicians in Cairo in two instances: one where he criticizes the number of physicians who were treating one patient: "in some cases a patient was healed of one ailment by ten physicians".<sup>57</sup>

In addition, the Genizah fragments have increased our knowledge of Jewish physicians practising in the Levant and their status.<sup>58</sup>

### *Several ways to acquire medical experience or to become a physician*

In the medieval Muslim world several ways were available to one wishing to learn medicine and become a physician, and to gain practical medical experience.<sup>59</sup> Two of these means have been gleaned from biographies and some letters found in the Genizah:

<sup>45</sup> T-S NS 321.34; T-S 16.291; T-S 10J20.5; T-S 16.290.

<sup>46</sup> Goitein, Maimonides.

<sup>47</sup> BM Or.5566B.

<sup>48</sup> T-S NS J422.

<sup>49</sup> T-S NS 306.48v.

<sup>50</sup> See in detail Lev, Work.

<sup>51</sup> T-S AS 152.131.

<sup>52</sup> T-S 16.1.

<sup>53</sup> T-S 24.67.

<sup>54</sup> See, e.g., a letter from physician who left his practice in a small village near Cairo and tried to establish a medical career in Cairo—T-S Or. 1081.J.5.

<sup>55</sup> Goitein, Society, II, pp. 241–250.

<sup>56</sup> T-S NS 321.34.

<sup>57</sup> Maimonides, Asthma, p. 117.

<sup>58</sup> Motzkin.

<sup>59</sup> Leiser.

1. Apprenticeship to a physician of repute.<sup>60</sup> Evidence of this course<sup>61</sup> being chosen by Maimonides is discussed in detail by Kraemer.<sup>62</sup>
2. Work in a hospital to improve learners' medical knowledge and enhance their careers. However, taking this option was fairly difficult as we learn from several letters. The young candidate had to obtain a letter of recommendation from a person of authority and social standing such as a governor or judge, and a certificate of good character from the local chief of police. Hospital work was of course easily accessible to prominent doctors.<sup>63</sup>

Some physicians prepared their own compounds and took certain stock remedies with them on their visits. A well-preserved fragment<sup>64</sup> that seems to be an inventory gives an idea of the objects carried. The list contains several instruments such as a mortar, scale, and glasses, indicating that the doctor or an assistant prepared the medicaments himself.<sup>65</sup> Goitein states that despite its close connection with the art of medicine, the profession of pharmacist was strictly separated from it, at least according to the testimony of the Genizah.<sup>66</sup>

### *Medical Institutions*

Much evidence of service by Jewish practitioners in "government" hospitals, mainly those built by Muslim rulers, is found in the Genizah fragments as well as in medieval Arabic sources. Goitein maintains that Jewish patients are never mentioned in the Genizah documents as making use of them.<sup>67</sup> The Jewish physicians were among the best and most prominent in the community,<sup>68</sup> such as Abraham Maimonides and Abū Sa'd.<sup>69</sup> Working in the hospitals enabled talented young physicians to complete their medical education and receive their licenses.<sup>70</sup> The

<sup>60</sup> T-S NS 321.34.

<sup>61</sup> T-S 16.291.

<sup>62</sup> Kraemer, Six.

<sup>63</sup> Goitein, *Society*, II, p. 250. Muslims students were also trained as physicians in mosques and religious schools (madrasa); see Amar & Lev, *Jerusalem*, p. 63.

<sup>64</sup> T-S K15.9r, see also T-S AS 152.131.

<sup>65</sup> Isaacs & Baker, p. xiv.

<sup>66</sup> Goitein, *Society*, II, pp. 271–272.

<sup>67</sup> Goitein, *Society*, II, p. 133.

<sup>68</sup> *Ibid.*, p. 250.

<sup>69</sup> *Ibid.*, pp. 250, 528.

<sup>70</sup> *Ibid.*, pp. 249–250.

standard monthly salary of a physician in the hospital of Cairo in 1240 was three dinars.<sup>71</sup>

Practising in the hospital was hard work, from early morning until about noontime, when the physicians could go and attend their private practice.<sup>72</sup> The physicians' duties at the hospitals included night shifts.<sup>73</sup> However, so far no historical evidence of the existence of a Jewish hospital in medieval Cairo has been found, or, as intimated, any reference to Jewish patients making any use of Muslim "government" hospitals.<sup>74</sup> We believe that this was due to Halachic issues, most probably the dietary laws and qualms about the religious purity of the medicines at an institution that operated under Muslim authorities. Members of the Jewish community were treated by private Jewish practitioners as needed. The "government" hospitals had different wards, for, say, eye diseases, operations, and intestinal ailments.<sup>75</sup>

### *Health, hygiene and diseases*

Health was an important and fundamental issue in the past as it is today—perhaps even more. It is no wonder that illness and diseases feature frequently in Genizah fragments.<sup>76</sup> Infectious diseases and epidemics prevailed mainly at times of war and famine,<sup>77</sup> for example, smallpox.<sup>78</sup>

### *Hygiene and regimen sanitatis*

The main response to the challenge of personal hygiene were the bathhouses: belief in the hygienic power of the sweat bath is demonstrated throughout the centuries by personal reports. Several Genizah fragments testify to the extensive use by medieval men as well as women of the bathhouses, and how important this institution was in their lives. One Cairo bathhouse was actually owned by a Jew.<sup>79</sup>

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<sup>71</sup> Ibid., pp. 256–257.

<sup>72</sup> Ibid., pp. 250, 257.

<sup>73</sup> Ibid., p. 250, Cohen, Life.

<sup>74</sup> Goitein, Society, II, p. 133.

<sup>75</sup> Ibid., 251.

<sup>76</sup> Ibid., V, pp. 103–110.

<sup>77</sup> Ibid., pp. 71–72, 112–115.

<sup>78</sup> Ibid., p. 107.

<sup>79</sup> Ibid., pp. 97–98.

As part of preventive medicine (*regimen sanitatis*) bloodletting was a regular activity (Friday was the preferred day), as well as anointing the body with oils and washing hands regularly. Some other preventive activities, such as applying kohl to the eyes (against eye diseases) and the use of tooth powder (*sanūn*) for oral hygiene, are recorded as well.<sup>80</sup>

### *Fees*

Fees varied according to the physician's professional standing and the socio-economic status of the patient. A few fragments shed light on this subject; for example, a physician was paid three dirhams weekly for treating a sore eye.<sup>81</sup> Rich people and rulers gave much more to their doctors, while patients with chronic disabilities and the handicapped were exempt from paying any fee.<sup>82</sup>

### *Pharmacy*

Pharmacy was the most popular of all branches of the healing art, according to the Genizah manuscripts. Goitein writes: "One need not delve deeply into the writings of the Cairo Genizah in order to discover that a great many of them refer to the professions connected with the processing and sale of drugs, spices, perfumes and potions for medical and culinary uses."<sup>83</sup> Elsewhere he states, "The prominence of the Jews in the professions of druggist and pharmacists during the High Middle Ages—which is paralleled by their equally strong representation in the fields of medicine on the one hand, and in that of the international trade in spices and drugs on the other—calls for comment."<sup>84</sup> He explains the phenomenon not as the continuation of a pre-Islamic tradition, but as a law of economic history, still in effect today, that minority groups have a chance of being successful in occupations not yet monopolized by the more privileged classes of the society. A subsidiary element might have been the fact that the pharmacist's profession was a bookish one.<sup>85</sup> The use of hand-books, classical *materia medica*, and medicine books such

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<sup>80</sup> Ibid., pp. 100–101.

<sup>81</sup> T-S Or.1080.J.1.

<sup>82</sup> Goitein, *Society*, II, p. 256.

<sup>83</sup> Ibid., p. 261.

<sup>84</sup> Ibid., p. 265.

<sup>85</sup> Ibid., p. 266.

as that of Dioscorides was an important part of the work. The Jewish religion too, as it developed in post-Talmudic times, had become very scholarly.

### *Pharmacists*

*Ṣaydalānī* (e.g., al-Isrā'īlī al-Ṣaydalānī)<sup>86</sup> or *ṣaydalī* is usually translated as pharmacist or apothecary. The latter occupation belongs to the same group, and there were specialists such as the *sufūfī* or preparer of medical powders.<sup>87</sup> The word *ṣaydalānī* is traditionally explained as dealer in sandalwood (*Santalum sp.*), so *ṣaydalānī*, like *ʿaṭṭār*, originally designated a perfumer.<sup>88</sup> The pharmacists were trained to collect and preserve the various medicaments brought from near or far-off lands.<sup>89</sup>

### *Perfumers and Druggists*

The occupation of *ʿaṭṭār*, usually translated as perfumer or druggist, is among those occurring most commonly in the Genizah.<sup>90</sup> Evidence of the popularity and the existence of the druggist calling can be found in a list of contributors (dated around 1095), in which four out of ten people whose occupations are noted are described as druggists. In a list of donors to a wheat collection for the poor in summer 1178, two *ʿaṭṭārs* belonged to the upper class of contributors, two to the middle, and three to the lower.<sup>91</sup>

The *ʿaṭṭārūn* usually operated in a special section in the market named *sūq al-ʿaṭṭārīn*;<sup>92</sup> the equivalent *murabbaʿat al-ʿaṭṭārīn* is mentioned as well.<sup>93</sup> In another fragment the term appears as the last name, for example, Ishāq al-yahūdī al-ʿaṭṭār,<sup>94</sup> Abū Ishāq Abraham b. Sahlān al-ʿAṭṭār,<sup>95</sup> and Abū al-Ḥasan b. Mūsā al-fāsīd al-ʿAṭṭār.<sup>96</sup>

<sup>86</sup> T-S NS.340.50, and few more for example: T-S 20.168; T-S K15.45.

<sup>87</sup> Goitein, Society, II, p. 261.

<sup>88</sup> Ibid.; see for examples of *ʿaṭṭār* T-S Ar.39.356r; T-S NS 340.50v.

<sup>89</sup> Isaacs & Baker, p. xi.

<sup>90</sup> See in detail Lev, Work, table 1.

<sup>91</sup> Goitein, Society, II, p. 261.

<sup>92</sup> T-S Or.1080.J.23.

<sup>93</sup> T-S Or.1080.J.38.

<sup>94</sup> T-S NS.340.50.

<sup>95</sup> T-S 13J13.28; T-S 13J16.14.

<sup>96</sup> T-S NS J416.



*Potion Makers and Sellers*

The *sharābī*, usually translated as one who prepares or sells potions, is another occupation frequently occurring in the Genizah—also sometimes as a last name (e.g., *Ibn al-Sharābī*).<sup>97</sup> The *ṭabbākh sharāb*, cooker of potions, presumably produced *sharābs* wholesale and supplied them to *sharābī* retailers. In some fragments physicians practising in a *sharābī*'s shop are mentioned,<sup>98</sup> but, it is the physician, not the *sharābī*, who was responsible for the prescriptions.<sup>99</sup>

*Traders and trade of drugs*

Egypt was a centre of intensive commercial activity, peopled by big merchants, small traders, various middlemen, and others. The trade in medicinal substances from India, Persia, the Levant, North Africa, and other countries was only a fraction of this multifaceted activity, which included spices, textiles, tools, and so on. Much information on this medieval aspect of mercantile activity can be gathered from documents published by scholars such as Goitein,<sup>100</sup> Gil,<sup>101</sup> Ben-Sasson,<sup>102</sup> Dietrich,<sup>103</sup> and Stillman.<sup>104</sup> Part B, chapter 5, presents some diagrams showing the role of pharmacists and doctors in the business of trading medicinal substances, besides the preparation and sale of such drugs.<sup>105</sup>

*Drug sellers, the muḥtasib, and the Market Police*

Very often patients bought their medicines from a drug seller. This roving herbalist probably relied for his sales not on a doctor but on his own diagnoses and suggested method of treatment, or on his clients' prescribing for themselves, that is, their self-medication. The market police were charged with protecting the customer's pocketbook, namely ensuring that expensive materials were not adulterated with cheaper substitutes. The drug sellers were monitored by an official known as

<sup>97</sup> T-S NS J27.

<sup>98</sup> T-S Or.1080.J.93; see also Goitein, *Society*, II, p. 261.

<sup>99</sup> *Ibid.*, p. 272.

<sup>100</sup> Goitein, *Society*, Goitein, Jewry.

<sup>101</sup> Gil; Gil, *Kingdom*.

<sup>102</sup> Ben-Sasson.

<sup>103</sup> Dietrich, *Egypt*.

<sup>104</sup> Stillman.

<sup>105</sup> See also Isaacs & Baker, p. xi.

*al-muḥtasib*,<sup>106</sup> who was well versed in religious matters and whose duties included inspecting and assaying drugs.<sup>107</sup>

### *Drugstores and Pharmacies*

The drugstores served as a landmark in a neighbourhood and often served as an address for a letter; its proprietor was thus usually referred to not by his profession but by his first name, or even a nickname. In a study of economic and legal aspects of commercial and industrial partnerships, Goitein found that drugstores and pharmacies are mentioned in more documents than any other occupation.<sup>108</sup> Many were run as partnerships, and sometimes even a single transaction was conducted as a partnership, for example, half a hundredweight of opium.<sup>109</sup> Many legal documents and letters relating to pharmacies, drugstores, and perfumers' shops have been found and studied.<sup>110</sup> The centre of the drug and perfume business in Fustat (Old Cairo) and in Alexandria was the Perfumers' Square, *murabba'at al-'aṭṭārīn*, often abbreviated to *al-Murabba'a* or *al-'aṭṭārīn*. There the wholesalers, who often acted as retailers too, had their place. Other shops were scattered in the different markets. Goitein found that a third of the Genizah letters that had a detailed address were directed to Perfumers' Square. It was second in importance as a social centre only to the synagogues.<sup>111</sup>

### *Contents of the druggist's shop*

From several legal documents such as wills and partnerships that were studied by Goitein we may get an idea of the contents of the druggist's shop: a cupboard, in which the medicinal substances were kept, and its base was the most important and most expensive item of furniture; a settee and mats, for the convenience of the customers; scales and weights, of special importance; pots, bottles, flasks, and vessels of different materials, shapes, and colours in which the drugs and the medicaments were kept. Mortars and copper pestles for the preparation of the

<sup>106</sup> al-Shayzari; al-Kurashi; Buckley; Levi-Provencal; Hamarneh, Functions.

<sup>107</sup> Isaacs & Baker, p. xii.

<sup>108</sup> Goitein, Society, I, pp. 173–179, 364.

<sup>109</sup> T-S 10J5, f.25.

<sup>110</sup> Goitein, Society, II, pp. 262–263.

<sup>111</sup> *Ibid.*, p. 263.

different medicinal materials; other shop paraphernalia existed and are mentioned in different fragments.<sup>112</sup>

*Medical literature of the Jewish community of Cairo*

Every medical book identified in the past, or that will be identified in the future, in the Genizah, in some way and at some stage of its existence (generally the last one) belonged to a Jewish person, particularly one in the medical profession. Accordingly, extensive research will enable us to reconstruct the bookshelf of the Jewish physicians and pharmacists of Muslim Egypt.

To learn more on the subject a preliminary survey was done. The classifying processes revealed 35 different books that have been identified so far.<sup>113</sup>

In terms of the authors' identities, of the books already been identified roughly one third were written by classical pagan authorities such as Galen<sup>114</sup> and Hippocrates. The absence of Dioscorides' book is strange and dubious—there is a good chance of finding it in one of the unidentified fragments since it was a basic book for physicians and pharmacists alike. One fragment, however, contains citations from Galen and Dioscorides. It is from a chapter listing names of drugs beginning with the Arabic letters *kāf* and *lām*.<sup>115</sup>

One third of the identified books are by Muslim writers such as Avicenna and Rhazes, and the rest are by Jewish physicians such as al-Kūhīn al-ʿAṭṭār<sup>116</sup> and Maimonides, who wrote abridged versions of Galen's works "On Temperaments" (T-S Ar.21.112) and "On the faculties of foods" (T-S Ar.44.51). The latter is preserved thanks only to the Genizah.<sup>117</sup>

Some fragments are copied from well known works. An example is a work by Ibn al-Bayṭār,<sup>118</sup> the Andalusian physician who visited the eastern Mediterranean region and described its *materia medica* in his writings.<sup>119</sup>

<sup>112</sup> Ibid., pp. 267–268.

<sup>113</sup> See in details Lev, Work, table 3.

<sup>114</sup> Galenus.

<sup>115</sup> T-S Ar.43.132.

<sup>116</sup> See primary report on Lev, Work.

<sup>117</sup> Stern.

<sup>118</sup> Ibn al-Baytar, al-Jami; Amar, Ibn al-Baytar.

<sup>119</sup> T-S Ar.41.130, 133, 138 and T-S Ar.39.5.

Fragments of several books by Maimonides, such as *Commentary on Hippocrates' Aphorisms* (Hebrew),<sup>120</sup> *Abridgement of Galen's On the faculties of foods* (Judaeo-Arabic),<sup>121</sup> *Treatise on sexual intercourse* (Judeo-Arabic),<sup>122</sup> and *Book of Poisons*,<sup>123</sup> have been identified. The books' contents are specialized medical aspects (e.g., fevers, eye diseases), *regimen sanitatis*, pharmacopoeias, glossaries of drug names, and lexica of *materia medica*.

More than 1360 fragments are clearly parts of medical books in Arabic, Hebrew, and Judaeo-Arabic in the Genizah. Isaacs, who performed a unique professional task in identifying the medical literature in his catalogue, could identify only a few.<sup>124</sup> An ongoing research project headed by E. Lev with the help of L. Chipman aims to identify as many books as possible. Findings will be published as a separate catalogue.

Some examples of parts of medical books that need to be identified (titles and authors) are *Lexicon of Materia Medica* (Hebrew, 12 pages),<sup>125</sup> *Sexual medicine* (Hebrew, 8 pages),<sup>126</sup> *Treatise on fever* (Hebrew, 92 pages),<sup>127</sup> and *Kitāb khalq al-insān* (Judaeo-Arabic, 4 pages).<sup>128</sup> Various diseases and symptoms are mentioned in the fragments of medical books and notebooks found in the Genizah, and some of the most frequent are set out in table 1.

Medieval pharmacists, like the physicians, were required to be acquainted with the current handbooks of medicaments, such as the famous *Dustūr al-bīmāristānī* (Hospital Handbook)<sup>129</sup> by the Jewish (Karaites) physician Ibn Abī al-Bayān (13th century) which was characterized by his pupil Ibn Abī Uṣaybi'a as "comprising the compound medicaments generally prepared in the hospitals of Egypt, Syria and Iraq and in the shops of the apothecaries".<sup>130</sup> Though the book is short the author claims it contains all the medicaments commonly prescribed.

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<sup>120</sup> E.g., T-S K14.11.

<sup>121</sup> E.g., T-S Ar.44.51.

<sup>122</sup> E.g., T-S Ar.44.79.

<sup>123</sup> T-S NS 327.70.

<sup>124</sup> Lev, Work, table 3.

<sup>125</sup> T-S K14.6.

<sup>126</sup> T-S K14.20.

<sup>127</sup> T-S K14.42.

<sup>128</sup> T-S K14.52.

<sup>129</sup> Ibn al-Bayan.

<sup>130</sup> Ibn Abi Uṣaybi'a, p. 584.

Table 1 Diseases mentioned in fragments of books in Cairo Genizah.

Symptoms and diseases	Fragments (examples)
Eye diseases	T-S NS 218.21; T-S K14.32; T-S AS 161.23; T-S AS 153.89; T-S AS 159.241
Skin diseases	T-S NS 222.68; T-S NS 222.67; T-S K14.9
Gynaecology	T-S Ar.45.21; T-S NS 90.36; T-S Ar.45.30
Oral hygiene and dentistry	T-S Ar.43.306; T-S NS 164.80; T-S Ar.40.119; T-S Ar.41.30
De-lousing	T-S K14.9
De-worming	T-S Ar.30.119
Joint pain	T-S NS 22.70

Several parts of this book have been identified among Genizah fragments.<sup>131</sup>

A much bigger book, *Minhāj al-dukkān fī al-adwiya al-nāfi'a lil-insān* (The shop guide—or How to run the [apothecary's] shop),<sup>132</sup> was written in 1259–60 by Abū al-Munā al-Kūhīn al-ʿAṭṭār. With time, this book became even more popular and was printed in Egypt several times between 1870 and 1940. It served as a guide for traditional drug sellers, and still does so.<sup>133</sup> A fragment of this book,<sup>134</sup> for example, was recently identified, and a critical edition of its eight pages has been published.<sup>135</sup>

More books, which were part of the medical library of Jewish physicians and pharmacists, are listed in Genizah fragments relating the sale of a medical library.<sup>136</sup> A unique case, a fragment about books left by a doctor named Abū Saʿd,<sup>137</sup> was published earlier, and it too will help us reconstruct the bookshelf of the Jewish doctors.<sup>138</sup>

A legal document (a court record: 1143 AD) describing the inventory of the estate of a *sharābī* containing 200 bound volumes and an unspeci-

<sup>131</sup> For the class marks see Lev, Work.

<sup>132</sup> Kohen, al-Attar.

<sup>133</sup> Goitein, Society, II, pp. 264–265.

<sup>134</sup> T-S Ar.40.91.

<sup>135</sup> Chipman & Lev, Syrup.

<sup>136</sup> T-S Ar.42.9r; T-S Ar.42.76.

<sup>137</sup> T-S NS J173.

<sup>138</sup> Baneth.

fied number of loose books, is an example of an extremely large library in those days, when all books were handwritten.<sup>139</sup>

Several fragments from Sābūr ibn Sahl (d. 255/869), a Nestorian Christian physician and pharmacologist, and author of one of the earliest and most famous Arabic pharmacopoeias known to scholars, were recently identified. The short version (*al-Aqrābādihīn al-ṣaghīr*, *Dispensatorium parvum*) has been edited,<sup>140</sup> and more recently translated into English, by Oliver Kahl, from a sole manuscript.<sup>141</sup> Some fragments from this book have been identified lately and will be published soon.<sup>142</sup>

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<sup>139</sup> T-S NS J27.

<sup>140</sup> Sabur, *Dispensatorium*.

<sup>141</sup> Kahl, *Small*.

<sup>142</sup> Lev & Chipman, Sabur; Chipman & Lev, Sabur.

## CHAPTER TWO

### PRACTICAL *MATERIA MEDICA* AND ITS SOURCES

Much information on medicine and the use of *materia medica* in the medieval period exists, but it is mainly based on the vast medical literature of that period, in the East and the West. These books cover various subjects: medical theories and doctrines, the maintenance of good health (*regimen sanitatis*)<sup>1</sup> or preventive medicine, different diseases and ailments and qualities of medicinal substances,<sup>2</sup> pharmacopoeias listing remedies and how to make them,<sup>3</sup> and *materia medica*—medicinal substances, their different names, and medical uses.<sup>4</sup>

Most of the books were written by qualified and learned physicians and pharmacists, are well organized, and were meant for teaching as well as reference for theory and practice.<sup>5</sup> Each author presents the optimal *materia medica* that should be used (to the best of his extensive knowledge), out of a very large inventory of medicinal substances from all over the Old World.

Little, in-depth research seems to have been conducted to explore what actually took place in medieval medical practice. As an example, we should mention Riddle's 1974 article,<sup>6</sup> dealing with the relation between theory and practice in medieval medicine in general and in medieval Europe in particular. Riddle even mentioned the Genizah as a source for such a discussion. However, the number of fragments known at that time was restricted, and therefore Riddle could not assess the true potential of the Genizah for the research of this issue.<sup>7</sup>

The recent studies of the case histories literature, both Graeco-Roman<sup>8</sup> and original Islamic records of medical case histories, namely

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<sup>1</sup> Maimonides, *Regimen*; Ibn Rushd.

<sup>2</sup> Ibn Sina; Maimonides, *Aphorism*.

<sup>3</sup> Sabur, *Dispensatorium*; al-Kindi; Kohen, al-'Attar.

<sup>4</sup> Ibn al-Byatar, al-Jami; al-Biruni, al-Ghafiqi.

<sup>5</sup> See, e.g., Maimonides, *Aphorism*.

<sup>6</sup> Riddle, *Theory*.

<sup>7</sup> *Ibid.*, p. 175.

<sup>8</sup> Alvarez-Millan, *Graeco-Roman*.

those written by al-Rāzī (d. 930), within his *Kitāb al-Ḥāwī* present a more recent attempt.<sup>9</sup>

Questions such as how much of the knowledge was actually used, that is, if there was a gap between theoretical medical knowledge found in the books and practical daily use of the doctrines and the *materia medica*, cannot be answered from the medical literature.

For example, each physician used the medical knowledge he acquired from his teachers and the medical literature of his time; however, most of the books were written centuries earlier, in many cases in other parts of the world, and were later translated and copied many times in different places.<sup>10</sup> Other books were written by court physicians, commissioned by the local ruler, especially in the Ayyubid period.<sup>11</sup> Authors of such theoretical books were never limited in choosing the *materia medica*: for example, Maimonides counselled the Muslim ruler al-Afdal to supply the court pharmacy with the best substances possible.<sup>12</sup> By contrast, practitioners who had to treat people from the lower socio-economic strata had to prescribe formulas based on the substances they knew and trusted, and that were available in the close vicinity and were stocked by contemporary pharmacists. Even then the availability of the substances was not guaranteed, and sometimes practitioners had to prescribe a substitute formula based on the less expensive and tried and trusted substances at hand.<sup>13</sup>

In reality the practical inventory of *materia medica* was thus smaller than the theoretical inventory, which was based upon the books that physicians had in their possession. It was only logical that some medicines and medicinal substances were used more often than others, according to price, availability, practitioners' choices, and even local medical trends.

The Genizah collection, consisting of various medical documents (prescriptions, lists of *materia medica*, as well as medical books) seems to create a golden opportunity to assess the quantities of both the practical and theoretical inventories of the Genizah people, and to display the actual gap. Moreover, we would like to probe the commercial cycle—of physicians, patients, herbalists, pharmacists, merchants,

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<sup>9</sup> Alvarez-Millan, *Practice*.

<sup>10</sup> See, e.g., Dioscorides.

<sup>11</sup> Amar, *History*, p. 76.

<sup>12</sup> Maimonides, *Poisons*, p. 93; Maimonides, *Regimen*, p. 59.

<sup>13</sup> On substitute materials see al-Biruni, II, pp. 42–44; Levey, *Drugs*.



market, international trade—and to reconstruct these inventories as lists of useful common/scientific names.

This being our goal, how could we learn about the practical uses of *materia medica*? How could we reconstruct the diseases that actually afflicted the people in the communities under study? And in turn, what were the most prescribed medicines and medicinal substances in eastern medieval society?

The best source for such research, focusing on the medieval Mediterranean community and supplying information on almost every aspect of life, seems to be the Cairo Genizah, as has been demonstrated by Goitein,<sup>14</sup> Gil,<sup>15</sup> Ashtor,<sup>16</sup> Ben-Sasson,<sup>17</sup> and others.

As mentioned in the Introduction, several scholars have dealt with medical issues in the Genizah such as Goitein,<sup>18</sup> Baker,<sup>19</sup> Fenton,<sup>20</sup> Dietrich,<sup>21</sup> Cohen,<sup>22</sup> Dvorjetski,<sup>23</sup> and especially Isaacs.<sup>24</sup>

In a focus study conducted by ourselves, the works of Isaacs, Goitein, and others on medicine in the Genizah were re-examined through our studying the fragments they mention in their works, and many dozens of new fragments identified as medical since Isaacs and Baker's catalogue was published.<sup>25</sup> Obviously, poring over the fragments for new interdisciplinary research will have different outcomes from doing so for cataloguing purposes. Still, the cataloguing process by Isaacs and Baker<sup>26</sup> enabled us to find the right documents and saved us much time and effort.

Our findings reveal that not all medical fragments may be treated as a single medical issue; they should be grouped according to their literary style and especially their uses. Isaacs and Baker do differentiate between various kinds of fragments—letters, lists, prescriptions,<sup>27</sup>

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<sup>14</sup> Goitein, Jewry; Goitein, Society.

<sup>15</sup> Gil; Gil, Kingdom.

<sup>16</sup> Ashtor, Books.

<sup>17</sup> Ben-Sasson.

<sup>18</sup> Goitein, Medical; Goitein, Society, I, p. 267, where Goitein publishes some prescriptions.

<sup>19</sup> Baker, Islamic.

<sup>20</sup> Fenton.

<sup>21</sup> Dietrich, Egypt.

<sup>22</sup> Cohen, Life.

<sup>23</sup> Dvorjetski, Genizah.

<sup>24</sup> Isaacs, Impact; Isaacs, Medieval; Isaacs & Baker.

<sup>25</sup> Niessen and Lev.

<sup>26</sup> Isaacs & Baker.

<sup>27</sup> Isaacs & Baker, pp. viii–ix.

although frequently they did not classify the manuscripts correctly (e.g., describing a medical formula found in part of a book as a prescription). Most of the data published in Isaacs and Baker's catalogue proves to be based on the theoretical medical literature, that is, medical writings copied from renowned books of earlier medical authorities, classical (e.g., Hippocrates, Galen) as well as Arab (e.g., Ibn Sīnā, Ibn al-Bayṭār) which were copied in many different editions.

The process of learning and analysis of the medical fragments of the Cairo Genizah (affording us knowledge as well as experience) led us to devise a method of distinguishing between different groups of information emanating from the fragments (this issue will be set forth in detail in a future publication). For example, now we can distinguish *theoretical professional medical writings*, written in a standard, firm, and clear hand (on sheets of the same size and quality, the same numbers of rows per page, and margins of fixed size) from the group of *authentic practical prescriptions*, usually written in vulgar style, scrawled, not longer than 1–2 pages, a sporadic number of rows, margins of various size, overleaf empty, verso inverted in relation to recto (and written between the lines or in the margins of books<sup>28</sup> or Bibles,<sup>29</sup> overleaf on official documents,<sup>30</sup> on private letters, or even on receipts).<sup>31</sup>

We discerned five main groups:

**A. Medical books** which were copied by a professional copyist from works written by physicians and pharmacologists. So far 1360 fragments of medical books have been identified in the T-S collection. The books are in Arabic (740), Judaeo-Arabic (470), and Hebrew (150). As for authors' identities, of the books already identified roughly one third were written by pagan classical authorities, including Galen and Hippocrates. It is worth mentioning that according to Maimonides "many, not only physicians, learn chapters of Hippocrates' medical books by heart"<sup>32</sup>

Another third of the books were written by Muslim writers, including Ibn Sīnā, al-Rāzī, Ibn al-Bayṭār, and 'Alī b. 'Īsā,<sup>33</sup> and the rest were

<sup>28</sup> T-S NS 194.70.

<sup>29</sup> T-S NS 66.46; T-S NS 279.57.

<sup>30</sup> T-S K.25.212.

<sup>31</sup> T-S Ar.34.150; T-S Ar.43.54.

<sup>32</sup> Maimonides, Hippocrates, p. 5.

<sup>33</sup> Ibn 'Īsā.

written by Jewish physicians such as al-Kūhīn al-‘Aṭṭār, Dā’ud Ibn Abī al-Bayān,<sup>34</sup> and Maimonides.<sup>35</sup> Other sources for the reconstruction of the “Genizah medical library” are lists of books owned by private people and sold after their deaths.<sup>36</sup>

**al-Kūhīn al-‘Aṭṭār’s** book was considered in the past—and contemporary scholars agree<sup>37</sup>—one of the most popular and useful pharmacopoeias in medieval medical circles.<sup>38</sup> Despite its practical characteristics, the book is actually one of theory. The great majority of fragments of medical books found and identified in the Genizah were on ophthalmology, namely ‘Alī b. ‘Īsā’s *Tadhkirat al-Kaḥḥālīn*.<sup>39</sup>

**B. Personal notebooks** of medical practitioners. Fifty such notebooks were identified. Their contents are medical theories, methods of healing, and selected prescriptions chosen and then copied for their own use by medical students or practitioners from books and famous physicians whom they worked with or under.<sup>40</sup> From our research into this bulk of notebooks we concluded that most concentrate on one area of medicine, such as ophthalmology,<sup>41</sup> gynaecology,<sup>42</sup> or dentistry,<sup>43</sup> and others deal with various recipes. These can give us a first clue as to the most prevalent diseases among the members of the community.

**C. Letters** of medical practitioners and patients, or sent to medical authorities or institutions.

Several letters from Maimonides were discovered, in which he gives medical advice and writes on other issues, and mentions medicinal substances.<sup>44</sup> We consider these specific letters as a kind of prescriptions, hence part of the evidence of the practical use of these substances. Another example is a letter from Maimonides in which he recommends drinking two cups of milk a day as a treatment (T-S 10J20.5).<sup>45</sup>

<sup>34</sup> Ibn al-Bayan.

<sup>35</sup> Stern; See in detail Part A, Chapter 1.

<sup>36</sup> Baneth; Frenkel; Goitein, Maimonides.

<sup>37</sup> Meyerhof, Yemen; Chipman; see figure 1.

<sup>38</sup> Chipman & Lev, Syrup.

<sup>39</sup> Ibn ‘Īsā.

<sup>40</sup> See part D appendix.

<sup>41</sup> T-S K14.32.

<sup>42</sup> T-S Ar.45.21.

<sup>43</sup> T-S Or.1080 7.17; see figure 2.

<sup>44</sup> T-S Ar.46.97; T-S Ar.30.286; see figure 3.

<sup>45</sup> Goitein, Letter.

**D. Prescriptions:** Written by physicians after meeting the patient and the formula has to be made by a pharmacist. One hundred and forty unique original prescriptions were found in the Genizah collection at Cambridge University Library. Several more were revealed in other collections. The prescriptions are treated in detail in part B, chapter 4.

**E. Lists of *Materia Medica*:** Inventories of pharmacies and order slips for substances required by pharmacists from suppliers or traders. The seventy-one original lists of *materia medica* found in the Genizah are generally devoid of any heading that might explain their uses. However, since they are different from merchants' letters, which discuss commerce in *materia medica*, and give no instructions on the use or preparation of a formula as a recipe, they were identified as lists. The lists of *materia medica* are treated in detail in part B, chapter 4.

The theoretical medical knowledge derived from the medical books was undoubtedly the main basis for the practical use of *materia medica* eventually made by contemporary practitioners. Quite clearly, they used only a fraction of it!

Accordingly, anyone wishing to study and assess realistically the medical aspects of Mediterranean society has no other choice than to check the authentic practical knowledge, like that emerging from the prescriptions and lists of *materia medica* found in the Cairo Genizah. Such information, uniquely and exclusively, enables us properly to understand medicine in general and practical medicine in particular in that era.

In general, the vast majority of the medical documents of the Genizah are undated, like other Genizah fragments, apart from ruler's orders, personal letters, legal documents (court orders, marriage agreements etc.). Paleographic and historical researches of the Genizah documents show that the fragments were written between the tenth and the nineteenth century, particularly, in the period of tenth to thirteenth centuries (the Fatimid and Ayyubid periods—969–1250, known also in the literature as the High Middle Ages),<sup>46</sup> the period of the community's greatest prosperity.<sup>47</sup>

Preliminary research on the medical practitioners, e.g. physicians and pharmacists, of the Jewish community in Cairo according to Genizah

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<sup>46</sup> Goitein, *Society*, I, pp. 29–38.

<sup>47</sup> Goitein, *Society*, I, pp. 1–28; Ben-Sasson; Gil; Gil, *Kingdom*.

documents and Muslim medical biographers reveals that the vast majority operated between the eleventh and the thirteenth century.<sup>48</sup> In light of this fact, it will not be baseless to assume that most of the prescriptions found in the Genizah were written in the same period. Needless to say, even later prescriptions, from the sixteenth century for example, represent the same medieval medical reality, because, in any case it was the same Greek-Arabic medicine that was traditionally used, almost without a change, for hundreds of years. One example of that phenomenon is the staying power of the medical theories and books of Hippocrates, Dioscorides and Galen, and the use of drugs that were mentioned then up to the present day in the traditional medicine of many Middle Eastern countries.

Exploring the medicinal materials, their uses, origin, and commerce, is the main goals of our research. These subjects are presented in detail in part C, chapters 6 and 7. Quantitative findings, provenance of the medical materials, and more issues are discussed in part B, chapter 4. Conclusions are drawn in chapter 5.

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<sup>48</sup> Lev, Work.

PART B  
DISCUSSION



### CHAPTER THREE

#### THE IDENTIFICATION OF *MATERIA MEDICA* IN THE GENIZAH AND THE METHOD OF PRESENTING THE DATA

Identification of medicinal substances mentioned in medieval sources in general, and in Genizah fragments in particular, is one of the most problematic and complex issues in the field of history of medicine and pharmacology. First, the texts are casual and deal with the daily life of the Genizah people (medicine, trade, private letters) and not literary, so the writing is not bound by the official or accepted rules of orthography. Occasionally, the texts were written by people not skilled or trained as scribes, hence the barely legible scrawl. Even when it is possible to read the content, the medical terms (mainly names of medicinal substances) are misspelled, therefore harder to decipher and identify.

Moreover, identifying this material was and remains problematic, even in the professional medical literature. It sprang from the wide and diverse sources of the substances right across the Old World, from India to Spain. Each substance, regardless of origin—animal, plant, inorganic, or some kind of combination—had different names in different languages, according to its geographic origin or ethnic background. Maimonides himself testifies to this situation: “For a single remedy may carry several names by the representatives of the same language, as a consequence of a coincidence in naming or a difference in the origin of the terminology by the inhabitants of various regions”<sup>1</sup>

This was undoubtedly an impossible situation, intolerable for merchants, traders, and medical practitioners, and dangerous for patients. To prevent confusion, traders as well as physicians and pharmacists had to use lists of synonyms, dictionaries, and other kinds of aids, which were crucial for mutual understanding and ensuring that they obtained the correct substances. We know of dozens of such works (Meyerhof mentions 30 in his introduction).<sup>2</sup> These works list the names of drugs—in various dialects and languages: Syrian, Latin, Greek, Persian, standard

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<sup>1</sup> Maimonides, Glossary, p. 3.

<sup>2</sup> Maimonides, Lexicography, pp. 7–9.



Arabic, Berber, Spanish, Sanskrit, and more. The authors of such dictionaries include some members of the Andalusian school such as Jonah Ibn Janāḥ,<sup>3</sup> Ibn Biklārish,<sup>4</sup> Maimonides,<sup>5</sup> and al-Idrīsī,<sup>6</sup> who exceptionally introduced many Hebrew words.<sup>7</sup>

In addition to works by scholars, that is, physicians and professional linguists, many others were composed, or more precisely copied out, in notebooks and as pamphlets, for personal use.<sup>8</sup>

Another problematic issue in the identification of medicinal substances in the Genizah and other medieval sources is their systematic categorization. The medieval classification method (systematics) was different from our scientific classification. The medieval system tended to classify plants and animals in larger groups according to external morphological characters, with no consideration of genetic proximity or anatomical similarity as is the case today. Therefore, the existence of a collective (general) name for a group of several similar species was common. Here are some examples of this feature.

1. Fūdhanj—Collective name for various species of aromatic plants, mainly of the Lamiaceae family.<sup>9</sup>
2. Ushnān—Collective name for various salt-flat plant species (*Salsola kali*, *Zygophyllum album*, *Salicornia fruticosa*, *Mesembryanthemum cristallinum*) from which pulverized ash was produced by slow burning.<sup>10</sup> This contains different alkaline substances such as sodium, potassium carbonate ( $K_2CO_3$ ; potash), and sodium carbonate ( $Na_2CO_3$ ; soda).<sup>11</sup>
3. Ghāsūl, bakhūr Maryam—Collective name for plants that contain detergents (saponins) such as cyclamen (*Cyclamen sp.*) and lion's leaf (*Leontice leontopetalum*).
4. Yatū<sup>c</sup>—Collective name for plant species that contain milky sap.

<sup>3</sup> Amar & Seri, Ibn Ganah.

<sup>4</sup> Amar & Seri, Ibn Biklarish.

<sup>5</sup> Meyerhof, History; Levey, Pharmacology, pp. 154–155.

<sup>6</sup> al-Idrisi.

<sup>7</sup> Amar & Seri, Idrisi.

<sup>8</sup> Dozens of such notebooks written in Hebrew, Judaeo-Arabic, Persian, Ladino, Yiddish, and other languages may be viewed at the Institute for Hebrew Manuscripts Microfilm Library at the Hebrew University in Jerusalem.

<sup>9</sup> Maimonides, Glossaire, no. 309.

<sup>10</sup> Issa, p. 22, no. 15; p. 161, no. 6.

<sup>11</sup> Amar & Seri, pp. 61–66.

5. Zāj—Collective name for salts of sulphuric acid (verdigris, vitriol) compounded with various metals such as iron, copper, lead, and zinc.<sup>12</sup>
6. Shīḥ—Collective name for several wormwood species (*Artemisia sp.*), particularly desert wormwood (*Artemisia sieberi*).
7. Shawkarān—Collective name for various poisonous plants such as henbane (*Hyoscyamus sp.*) and mother die (*Conium maculatum*).
8. Ḥandaqūqā—Collective name for similar plant species of the Fabaceae (= Papilionaceae) family, such as clover (*Trifolium sp.*), melilot (*Melilotus sp.*), and fenugreek (*Trigonella sp.*).
9. ʿAwsaj—Collective name for spiny bush species such as boxthorn, buckthorn (*Lycium sp.*), (*Rhamnus sp.*), and bramble (*Rubus sp.*).

It should be mentioned that it is not always possible to be as specific about an identification as might be thought. The local varieties could differ substantially, and often some related species might be intended. Controversy over the exact name and the precise identification of some of these substances and others started in the Middle Ages, as stated by Maimonides.<sup>13</sup> In our work, on account of the uncertainty we have bundled such similar substances in one entry under a general (collective) name, even though they could be different species or kinds (identified by us in most cases). Such cases can be found in part C, chapter 6, in the entries for vitriol and wormwood.

### *Methodology*

The identification of the medicinal substances mentioned in the Genizah fragments is complicated by many difficulties, aside from the regular ones facing every Genizah researcher, such as poor preservation (stains, fading), incomplete texts (holes, tearing) and the diverse and sometimes illegible handwriting of professionals or laymen alike. These difficulties were partly elucidated by Isaacs and his team, who confronted them when trying to identify the various medicinal herbs mentioned in his catalogue. Other difficulties encountered were caused by the wide range

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<sup>12</sup> Maimonides, Glossaire, no. 140; Amar & Seri, pp. 67–69.

<sup>13</sup> Maimonides, Glossaire, nos. 55, 88.

of names for each plant, as well as corrupt names sometimes written as forms of Greek or Persian terms.<sup>14</sup>

Another problem that historians and Genizah researchers usually face is the millennium-old languages in which the manuscripts are written, such as Arabic, Hebrew, and especially Judaeo-Arabic. However, some of the prescriptions are related to Greek antecedents in varying degrees.<sup>15</sup> Owing to the successful efforts made by the Arabs to expand and improve their range of *materia medica*, doctors at that time had a very sizeable repository of pharmaceutical knowledge at their disposal. Jewish writers preferred to use Arabic terms, rather than Greek or even Hebrew.<sup>16</sup> The use of different names for the same substance was even an issue for physicians who came from the Islamic West, such as Maimonides. When the sage of Cordoba moved to the Eastern Mediterranean, Maimonides, like many other physicians of the Islamic world who were great travellers, became keenly aware that the same drug had different names, often three or four, in different parts of the world, and sometimes even in the same place. As a result Maimonides wrote his glossary (a multilingual dictionary of *materia medica*) which was later edited by the German-Jewish physician Max Meyerhof, who spent almost all his working life in modern Egypt as a doctor.<sup>17</sup>

The present authors managed these difficulties with the aid of previous field and historical research conducted individually by Lev<sup>18</sup> and Amar,<sup>19</sup> and by both together as a team.<sup>20</sup> The knowledge and experience we acquired were very useful for the current work. Of special importance is the comparative collection of *materia medica* of the Middle East that was assembled a decade ago, consisting of hundreds of materials. The process of buying the materials, recording their traditional uses, or collecting them in the wild increased our knowledge, improved our identification methods, and gave rise to new methods for handling and examining the substances directly. Our training as botanists on

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<sup>14</sup> Isaacs & Baker, p. xii.

<sup>15</sup> Ibid.

<sup>16</sup> Ibid.

<sup>17</sup> Maimonides, Glossaire.

<sup>18</sup> Lev, Animals; Lev, Clay; Lev, Galilee; Lev, Inorganic; Lev, Jerusalem; Lev, Materia Medica; Lev, Materials; Lev, Medicinal; Lev, Trade; Lev, Zootherapy; Lev, Work.

<sup>19</sup> Amar, Cassia; Amar, Colocynthis; Amar, Dibs; Amar, Herbalist; Amar, Industrial; Amar, Medieval; Amar, Pomegranate; Amar, Production; Amar, Sumach; Amar, Theriac.

<sup>20</sup> Lev & Amar; Lev & Amar, Ethnic; Lev & Amar, Jordan; Amar et al.; Amar & Lev, Jerusalem; Amar & Lev, Mamluke; Amar & Lev, Survey.

the one hand and historians on the other, together with the history of the research, allowed us to reassess the findings of earlier researchers who engaged in identifying medicinal substances. This differed from the work of other important scholars, who are strictly historians; scientific knowledge and apparatus was missing, and the identifications were based mainly on library work, without acquaintance with the substances themselves.<sup>21</sup>

This new approach combines botanical and zoological training, sound knowledge of and expertise in the flora and fauna of the Levant and Eastern Mediterranean, and the application of scientific tools acquired in over 20 years of research.

In general, the identification was accomplished by analysis of the text and the context, and by comparison with medieval medical literature, namely the dictionaries of names of *materia medica* mentioned earlier. Yet the most important criterion, which took us to the highest or most satisfactory level of identification, is the continuous and reliable “tradition of identification”. Many substances that appear in the texts are used (with the same names) for medical purposes by various ethnic groups. Records of such uses in Egypt in the recent past and in present-day markets were made by various scholars, mainly Meyerhof,<sup>22</sup> Ducros,<sup>23</sup> and others.<sup>24</sup>

For example, the plant “jawz mathal” was identified by Meyerhof and Isaacs as a species of *Datura*. Yet as far as we know, the origin of this species is the New World, and we find it hard to believe that it was known in medieval Egypt.

Another problem we faced was the names of the medicinal plants identified by Isaacs in his catalogue. These were written unsystematically and inconsistently (sometimes with English names, sometimes scientific names or Arabic names), and in various cases names were mixed and changed (sweet cyperus, bran, plantain). Clearly, we had to re-check every single identification made by Isaacs of medicinal substances mentioned in the Genizah fragments. The necessary care we took, our experience, and our unique methods resulted in the accurate identification of 278 of the 298 names of *materia medica* mentioned in the fragments

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<sup>21</sup> This was the impression we had learning identifications of Gil, Gil, Kingdom and Ben Sasson.

<sup>22</sup> Meyerhof, Bazar.

<sup>23</sup> Ducros.

<sup>24</sup> Ahmed et al.

consisting of prescriptions and lists of medical substances. The unidentified substances were taken in consideration in some of the statistical analyses.

For the purpose of identification we also used botanical dictionaries such as that of Issa<sup>25</sup> and Bedevian.<sup>26</sup>

*Method of presenting the data: Entries of medicinal substances*

This book divides the various medicinal substances into two main categories. The first is a selection of 120 substances which are the most frequently mentioned in the manuscripts and therefore, presumably, the most common and even the most important substances. These 120 are presented in the greatest detail. The second category is a selection of 140 substances about which less information has been collected regarding their medicinal use, perhaps because they were rarer or simply of less importance. The 140 substances are presented in a concise format.

The entries are presented in alphabetical order of the English names of the substances, although several indices (Arabic, English, Hebrew and scientific names) were compiled to serve as a handy scientific instrument (semi-encyclopaedia) for scholars in various fields, including history of trade, commerce, pharmacology, and medicine.

When writing and editing this book we faced several major structural problems of how to present properly the vast amount of data we collected in this research. The main critical issue was the presentation of the different medicinal substances recorded in the Genizah sources. Various ways were considered: in groups, for example, according to their origin as Dioscorides did in his book<sup>27</sup> (plants, animals, inorganic materials); in alphabetical order<sup>28</sup> of the scientific name; or later, according to their English common names. However, since the book is about practical *materia medica*, we chose to present the simples in relation to their actual use, namely, frequency or repetition of the substance in the sources (e.g. Genizah fragments of prescriptions and list of *materia*

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<sup>25</sup> Issa.

<sup>26</sup> Bedevian.

<sup>27</sup> Dioscorides.

<sup>28</sup> As was common in most lexica of *materia medica*, in various cultures and languages.

*medica*).<sup>29</sup> We set a five-time appearance of a substance as the boundary between less commonly used medicinal substances (presented in part C, chapter 7) and those more frequently used (presented in part C, chapter 6).

As stated, this research intends to present the contribution of the Genizah documents to the reconstruction of practical medieval Arabic medicine in comparison with the theoretical medicine found mainly in the medieval medical literature. However, even this original documentation has disadvantages; medical prescriptions represent, after all, inconsistent and sporadic information. The disease's name does not always appear and in most cases, the date, as well as the name of the patient or the physician, is missing too.

We have tried to overcome the disadvantages regarding the medical uses of the medicinal substances by crossing the information from the medical prescriptions with information we gathered from medical books and notebooks found in the Genizah (i.e. mainly theoretical and semi-theoretical medicine) and from other medieval Arabic medical literature. The latter supply information regarding the general medical uses of various substances and of common diseases. The information from medical literature found in the Genizah is more significant, since evidently, these books and notebooks were used by the practitioners of the Jewish community of medieval Cairo.

#### *Arrangement of the entries of medicinal substances*

The standard arrangement of the detailed entries as follows:

**English name:** According to modern dictionaries of plant names,<sup>30</sup> a systematic list of wild Levantine flora,<sup>31</sup> and various scientific floras and other sources.

**Scientific name:** Linnean system. According to previous sources and other scientific literature. The scientific family name is in parentheses.

**Arabic (A):** Names taken from the Genizah manuscripts, from the works of prominent Arab physicians cited in the various entries, and

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<sup>29</sup> In the drug-sellers' shops in the markets the medicinal substances were stored not in any scientific order but according to practical needs.

<sup>30</sup> Issa.

<sup>31</sup> Fragman et al.

from Maimonides' pharmaceutical dictionary.<sup>32</sup> Owing to the historical circumstances (time and geographical span) a substance occasionally has several different names.

**Description and history (D&H):** A condensed description of the medicinal substance and the history of its use, mainly medical. Questions of identification are presented as required.

**Practical uses as shown by the Genizah (PU):** Information drawn from the original lists of *materia medica* written by pharmacists and from physicians' prescriptions written in Arabic, Judaeo-Arabic, and Hebrew.

**Theoretical uses according to medical literature in the Genizah (TU):** The medical uses of the substance as indicated in various Genizah manuscripts. These constituted the professional literature used by the physicians and pharmacists.

**Medicinal uses in other medieval literature (OMU):** Medicinal uses from other medieval sources (medical and pharmaceutical literature), and medical properties.

**Trade, agriculture and industry (TAI):** Information on commerce in the substance, its origin, production place, or agricultural matters, as relevant.

**Traditional medicine and general uses (TM):** Traditional uses recorded by the inhabitants of different geographic areas and belonging to various ethnic groups in the Middle East.

#### *Remarks regarding literature used*

**A. Description and history (D&H):** From the variety of available sources for ancient/classical historical medicinal uses, three of the most important classical works were selected:

**Theophrastus**—Theophrastus of Eresus (370–287 BCE) was a Greek philosopher and a pupil of Aristotle. According to legend, Theophrastus inherited Aristotle's plant garden and devoted his life to the study of plants, publishing basic texts on their morphology, taxonomy, and physiology. He is considered the father of botanical science. His most famous work is his *History of Plants* in which 500 medicines are mentioned.<sup>33</sup>

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<sup>32</sup> Maimonides, Glossaire.

<sup>33</sup> Theophrastus.

**Dioscorides**—Pedanius Dioscorides of Anazarbus was a 1st-century CE Greek physician, one of the founders of medical botany, who served in the armies of Nero and Vespasian. During these military expeditions he collected plant, animal and mineral specimens and examined their medical qualities. He is famous for his treatise *Materia Medica*, a systematic medical codex that describes textually and graphically hundreds of medicinal plants and scores of animals and minerals that were used for curative purposes. This book became the basic text for pharmacology and medicine for over 1600 years.<sup>34</sup>

**Pliny the Elder**—Caius Plinius Secundus (23–79 CE) was a Roman soldier, scientific researcher, and writer. Pliny published scores of books that have been lost, but his encyclopaedic collection *Historia Naturalis* (Natural History) has survived. It consists of 37 books, of which books 20–37 deal with the medicinal use of plants, minerals, and animals.<sup>35</sup>

**B. Medieval medicinal and pharmaceutical information:** Out of the wide range of available sources for the description of medieval medical uses, several were selected:

**Assaph (Assaf) Ha-Rofe**—Assaph Ha-Rofe was a Jewish physician whose exact period and place of activity are unknown. Researchers assume he was active in the north-east of the Levant sometime between the 6th and 10th centuries CE. His teachings were apparently collected by his disciples in a book written in his name, and based on the school of Hippocrates. His language is influenced by the Talmud and his books describe medical principles, methods of treatment, medicinal substances, and many varied prescriptions.<sup>36</sup>

**Sābūr b. Sahl** (d. 869 CE), a Nestorian Christian physician and pharmacologist, wrote one of the earliest and most famous Arabic pharmacopoeias known to scholars. He is reported to have been in charge of the hospital at Jundishāpūr until he left for Iraq. The short version (*al-Aqrābādihīn al-ṣaghīr*) of his pharmacopoeia has been edited,<sup>37</sup> and more recently translated into English, by Oliver Kahl from a unique manuscript, MS Berlin or.oct.1839.<sup>38</sup>

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<sup>34</sup> Dioscorides; Riddle, Dioscorides.

<sup>35</sup> Pliny.

<sup>36</sup> Assaph; Assaph, Introduction.

<sup>37</sup> Sabur, *Dispensatorium*.

<sup>38</sup> Kahl, Small; Kahl, Sabur.



**al-Kindī**—Abū Yusūf Ya‘qūb b. Ishāq al-Kindī (800–870 CE) was a scholar of philosophy, mathematics, and astrology. He was born and lived in Iraq, and acquired his scientific knowledge in Basra and Baghdad.<sup>39</sup> As tutor to the caliph’s son, he was exposed to the works of classical philosophers and physicians and later even translated them into Arabic. Most of his works are lost; the two that have survived are his books *On the Chemistry of Perfume and Distillation* and *Medical Formulary* or *Aqrābādihīn*, which contains hundreds of medical prescriptions of his time.<sup>40</sup>

**al-Rāzī**—(Rhazes) Abū Bakr Muḥammad b. Zakarīyā’ al-Rāzī (865–925 CE) was an Arab physician and philosopher. His medical education was acquired in Baghdad where he also served as physician to the ruling authorities and director of the hospital. Al-Razi is ranked among the most original and prolific writers during the Middle Ages. He wrote 184 books, fifty-six of which are on medical science. His works were translated into Latin and Hebrew and they served for centuries as medical textbooks.<sup>41</sup>

**al-Tamīmī**—Abū ‘Abd Allāh Muḥammad b. Aḥmad al-Tamīmī was a 10th-century CE Muslim physician born in Jerusalem.<sup>42</sup> His medical education was acquired in Jerusalem, Ramlah and Egypt. His numerous medicinal treatises have not survived, but parts of his book *al-Murshid* (The Guide) are extant in unpublished manuscripts, and other parts of it are cited by later medical writers. al-Tamīmī specialized in eye medicine and theriac.<sup>43</sup>

**Ibn Sīnā**—(Avicenna) Abū ‘Alī al-Ḥusayn b. ‘Abd Allāh (980–1037 CE) is among the great Arab philosophers. He was also an eminent physician, who published books on philosophy, the sciences, and medicine. His most important medical work, *The Canon of Medicine*, became a basic textbook for medieval physicians of all faiths. The book was translated into many languages and contains much information on the field of medicine and medicinal substances.<sup>44</sup>

**al-Bīrūnī**—Abū al-Rayḥān Muḥammad b. Aḥmad al-Bīrūnī al-Khwarizmī (973–1048 CE) is considered one of the great Muslim scholars. He was well-versed in many fields such as mathematics, history,

<sup>39</sup> Hamarneh, Al-Kindi.

<sup>40</sup> al-Kindi.

<sup>41</sup> al-Razi.

<sup>42</sup> Sezgin, III, p. 318; Leclerc, Histoire, I, pp. 388–391; Amar, Traditions.

<sup>43</sup> al-Tamimi; Amar & Seri.

<sup>44</sup> Ibn Sina; al-Ani; Siddiqi.

linguistics, philosophy, and the natural sciences. His many works were translated and published in several languages. The book *Pharmacy and Materia Medica* faithfully documents the medicinal drugs of his period and the work of scholarly pharmacists.<sup>45</sup>

**al-Ghāfiqī**—Abū Ja‘far Aḥmad b. Muḥammad ibn al-Sayyid al-Ghāfiqī (died 1166 CE) was an important scholar and physician in Andalusia. He was considered an expert on the subject of medicinal substances, their names, and their uses. His well-known book *On Simple Drugs* was used by pharmacists and folk healers until modern times.<sup>46</sup>

**Maimonides**—Rabbi Moses ben Abraham ben Maimon (1138–1204 CE) was a Jewish philosopher, halachic authority, and physician, of Spanish origin. He migrated to Egypt and lived in Cairo from 1166, while in the service of the Ayyubid rulers. Apart from his halachic works, his medical and pharmacological treatises include the books *On Asthma, Poisons and Their Antidotes, Aphorisms of Moses*, and *Glossary on Medical Materials*. These books were translated into many languages and they teach much about the medical uses of various medicinal substances.<sup>47</sup>

**Benevenutus Grassus** was a Frankish physician active at the time of the Crusader Kingdom of Jerusalem (12th–13th centuries CE). His religious affiliation is unknown (Jewish or Christian). In his important book on eye medicine he calls himself the ‘Jerusalemite’ and notes ‘our Jerusalem medications.’ His book influenced eye medicine in Europe.<sup>48</sup>

**Ibn Abī al-Bayān** (d. 1236), a Karaite who was court physician to Saladin’s successor, a pupil of Ibn Jumay‘, Saladin’s court physician, a teacher of Ibn Abī Uṣaybi‘a, and a director of a hospital in Cairo. His book *al-Dustūr al-bimāristānī*,<sup>49</sup> a hospital pharmacopoeia compiled for use in his hospital, replaced that of Ibn al-Tilmīdh.<sup>50</sup>

**Ibn al-Bayṭār**—Maḥmūd b. ‘Abd Allāh b. Aḥmad Ibn al-Bayṭār al-Malaqī (1197–1248 CE) was born in Malaga in southern Spain. He studied medicine and botany with Abū al-‘Abbās al-Nabaṭī in Andalusia and set off on a study expedition around the Mediterranean. Thereafter he became court physician to the Ayyubid rulers in Egypt. His extensive

<sup>45</sup> al-Biruni.

<sup>46</sup> al-Ghāfiqī.

<sup>47</sup> Maimonides, *Aphorisms*; Maimonides, *Asthma*; Maimonides, *Glossaire*; Maimonides, *Haemorrhoids*; Maimonides, *Hippocrates*; Maimonides, *Poisons*; Maimonides, *Answers*; Maimonides, *Regimen*; Maimonides, *Sexual*.

<sup>48</sup> Benevenutus; Kedar.

<sup>49</sup> Ibn al-Bayan; *EI*, III, p. 683; Lev et al.

<sup>50</sup> Khamarneh, Ibn al-Tilmīdh.

knowledge in general and of the plants in the Land of Israel in particular, is reflected in his books, the most famous being the *Compendium on Simple Drugs* which also contains citations from earlier physicians, since forgotten.<sup>51</sup>

**al-Kūhīn al-‘Attār al-Isrāīlī** was a 13th-century Jewish pharmacist active in Egypt. He wrote an important book on pharmacology, which acquired a place of honour in the practice of traditional medicine until modern times.<sup>52</sup>

**al-Qazwīnī**—Zakariyā’ b. Muḥammad b. Maḥmūd al-Qazwīnī (died 1283 CE) was a Persian scholar, scion of a famous family of imams, a judge, and a scientist. He was interested in the natural sciences and wrote a book called *Monuments of the Lands and Histories of Peoples* in which he describes countries according to their geographical and historical aspects. Another important book of his is *Wonders of the Creation and Unique of the Existence*, which contains descriptions of minerals, plants and animals and their uses in daily life and in medicine.<sup>53</sup>

**R. Nathan ben Yoel Falaquera** (13th century CE) was a Jewish physician of Spanish origin. He wrote a medical encyclopaedia in Hebrew, *Šori ha-guf*, setting forth the principles of ancient medicine, health and disease, and *materia medica*.<sup>54</sup>

To present a complete picture, other physicians, pharmacists, and scientists are cited where necessary.

### *Medieval weights and measures*

Standard weights and measures differed in various historical periods, communities, and geographical locations. Below is an estimate of the most common of them set out in prescriptions and lists of *materia medica* in the Genizah, based on previous works.<sup>55</sup>

Dirham – 3.1 grams

Mithqal – 4.5 grams

Ūqiyya – 27.2 grams

<sup>51</sup> Ibn al-Baytar, al-Jami; Amar, Ibn al-Baytar.

<sup>52</sup> Kohen, al-‘Attar.

<sup>53</sup> al-Qazwini.

<sup>54</sup> Amar & Buchman.

<sup>55</sup> Amar, de Silva, p. 115; Amar & Buchman, p. 91.

According to Goitein these weights are:<sup>56</sup>

Dirham – 3.5 grams or 48 grains

Ūqiyya (ounce) – 37.5 grams, 12 dirhams

Raṭl – 12 ounces

According to Hinz they are:<sup>57</sup>

Ūqiyya – 33.85 gr

Raṭl – 450 gr

Qirāt – 0.195 gr

Dirham – 3.125 gr

Mithqāl – 4.68 gr

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<sup>56</sup> Goitein, *Society*, II, p. 267.

<sup>57</sup> Hinz.

## CHAPTER FOUR

### PRESCRIPTIONS, LISTS, LETTERS, AND THEIR ANALYSIS

Anyone wishing to study and assess realistically the medical aspects of Mediterranean society in the Middle Ages has no other choice but to check authentic, practical knowledge, like that which can be extracted from the prescriptions, lists of *materia medica* (M.M.), and medical letters found in the Cairo Genizah. Such information uniquely and exclusively enables us properly to understand medieval medicine in general and practical medicine in particular in that period.

As mentioned in the introductory chapters, this book is concerned mainly with one aspect of the history of medicine of the Jewish community of Cairo (as a reflection of eastern medieval societies), namely the practical uses of natural substances for medicine. Sources for such research of a medieval community are extremely rare since all records of practical medicine naturally vanish over the years, and only some medical books, which expound theoretical medicine, were recurrently used, sold, or kept in libraries, hence have survived to the present day.<sup>1</sup>

Medical treatment usually began with a patient visiting a physician in his clinic, continued with the latter writing a prescription, which was subsequently prepared by a pharmacist at his pharmacy. In other cases the physician saw patients in a rented room at the back of the pharmacy.<sup>2</sup> The prescription stage is usually missing from historical records for various reasons: in some cases the physician made up the formula himself so no prescription existed, but in most cases there was presumably no reason to keep the prescriptions, and they were torn up or thrown away.

It was possible to realize the goal of reconstructing and studying the practical application of M.M. by the Genizah people only due to the peculiar habit of the members of this community to gather all written documents and keep them in the attic of their synagogue; they did so on the basis of an unwritten religious law. Another factor is the dry

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<sup>1</sup> Alvarez-Millan, Practice.

<sup>2</sup> Isaacs & Baker, p. xiv.

climate of Old Cairo, which contributed much to the preservation of the fragments for more than a thousand years. These circumstances have enabled us, to date, to trace 140 prescriptions, three letters, and the remnants of 71 M.M. lists, most of which were inventories of pharmacies drawn up for the purpose of forming or dissolving partnerships, commercial orders, and taxation.

In this chapter we discuss mainly three groups of documents according to their contribution to our knowledge of medieval medicine, understanding its practice, and the uses of medicinal substances: the groups are prescriptions, M.M. lists, and medical letters. Other outcomes from the study of these documents will be considered here as well. Chapter 5 concerns the practical M.M. inventory, which is based on the above documents, the theoretical inventory, which is based on medieval medical books found in the Genizah, their analysis and comparison, and other related subjects.

#### A. *Cairo Genizah prescriptions: their importance and contribution to the research*

Prescriptions were written by physicians after seeing the patient; the recipe (formula) would be made up by pharmacists. One hundred and forty unique original prescriptions were found in the Genizah collection at Cambridge University Library; of these, forty prescriptions were more or less complete. A few more were discovered in other collections.

In most cases they are written in Arabic script (92) or Arabic written in Hebrew script (Judæo-Arabic) (47), the most widely used languages and dialects in the daily life of medieval Cairo. Very rarely Hebrew (1) or Judæo-Persian (1) is found. In a few cases<sup>3</sup> the prescription is written in Judæo-Arabic but the benedictions that open and close it are written in Arabic script.

In one case, the same formula is written in Judæo-Arabic on one side of the sheet and in Arabic on the other.<sup>4</sup> In another case two similar versions of the same formula, written in Arabic and headed *ma'jūn hibat Allāh*, are found on the same side of a fragment.<sup>5</sup>

<sup>3</sup> E.g., T-S Ar.30.305; see figure 4.

<sup>4</sup> T-S AS 155.365; see figure 5.

<sup>5</sup> T-S Ar.34.305.

The handwriting is usually sloppy and unclear. A few prescriptions were copied identically,<sup>6</sup> others with changes, from famous books such as *Minhāj al-dukkān*<sup>7</sup> or *al-Dustūr al-Bīmāristānī*—identical<sup>8</sup> as well as similar.<sup>9</sup>

Most of the prescriptions were written on one page, usually on one side of sheet of paper (very rarely vellum). Often prescriptions were written on reused paper (at times in the margins or in between the lines of other documents or even books).<sup>10</sup>

The most important and interesting information is undoubtedly to be found in the prescriptions, as they reflect the medical reality that actually existed. A unique aspect of the information that emerges from the prescriptions is their originality. Unlike the information derived from books, which usually were copied from classical or contemporary medical sources, the prescriptions are clear-cut primary evidence of the medicinal substances actually in use, the medical conditions that afflicted the members of the community, and the ways they were treated.

The most important information emerging from the prescriptions is the medicinal substances in them: 242 substances were recorded in the prescriptions identified (table 2). A few more substances are recorded, however, since their main use was food; they are presented in Part D, Appendix 4. Various names of medicines were recorded as well, and these are set out in Part D, Appendix 3, with a short explanation of their uses and history.

Table 2 Medicinal substances recorded in the Genizah prescriptions.

Origin	Number	%
Plants	195	80.6
Animals	20	8.2
Inorganics	27	11.2
<b>Total</b>	<b>242</b>	<b>100</b>

We consider the prescriptions clear-cut evidence of the use of these substances for medicinal purposes and an important element of medical knowledge in its practical form.<sup>11</sup>

<sup>6</sup> E.g., T-S Ar.42.67; T-S NS 297.17.

<sup>7</sup> E.g., T-S Ar.30.65; T-S Ar.39.274; T-S Ar.41.71.

<sup>8</sup> E.g., T-S Ar.42.67; T-S NS 297.17.

<sup>9</sup> E.g., T-S Ar.41.81.

<sup>10</sup> E.g., T-S NS 194.70.

<sup>11</sup> See the complete list of the identified prescriptions, including information on each one of them, in Part D, Appendix 5.

From examining the dozens of prescriptions discovered in the Genizah we were able to draw up the general form of the original prescriptions. Nearly all the prescriptions consist of the following fundamental parts:

1. *Materia Medica*—3–10 substances mainly of plant, animal, and inorganic origin.
2. Measurements—quantities of the substances to be used (dirham, 'ūqqiya)<sup>12</sup>
3. Cooking instructions (boil with, soak in, stir)

The following parts are found rarely, but they are very helpful in identifying a fragment as a prescription:

1. Benedictions at the beginning<sup>13</sup> (13) or end of the recipe<sup>14</sup> (16), or both<sup>15</sup> (12).
2. Symptoms/diseases (10).<sup>16</sup>
3. Name of the inventor of the recipe (1).<sup>17</sup>
4. Name of the medicine (20).<sup>18</sup>
5. Instructions for users (how many times a day and what quantities) (2).<sup>19</sup>
6. Name of the patient (2).<sup>20</sup>

Generally two versions of prescriptions were found:

#### *Version A*<sup>21</sup>

In the name of God, the merciful

Take xx, yy, zz (3–10 substances),

Measurements/quantities (e.g. for of each one *dirham*),

Instructions (boil with, soak in...)

Help with God's will/medicine for xxx

<sup>12</sup> See Part A, Chapter 3.

<sup>13</sup> E.g., T-S Ar.41.125; T-S Ar.34.239.

<sup>14</sup> E.g., T-S Ar.39.274; T-S Ar.42.60.

<sup>15</sup> E.g., T-S Ar.30.305; T-S Ar.41.72.

<sup>16</sup> T-S NS J89; T-S K25.116; T-S NS 265.62.

<sup>17</sup> T-S Ar.34.305.

<sup>18</sup> T-S Ar.30.291; T-S AS 150.59.

<sup>19</sup> E.g., T-S Ar.30.305; T-S AS 142.22.

<sup>20</sup> T-S Ar.39.211; T-S Or.1081.J.39.

<sup>21</sup> See, e.g., T-S Ar.30.305; T-S Ar.30.65.



*Version B*<sup>22</sup>

Treatment/medicine for xxx/name of recipe  
 Take xx, yy, zz (variously with 3–10 substances),  
 Measurements/quantities (e.g. of each one *dirham*)  
 Instructions (boil with, soak in)

Prescriptions can teach us about the prevailing diseases and their symptoms that members of the community actually suffered from. Unfortunately, in most cases neither the symptoms nor the patient's name appear on the prescription.

Still, analyzing the prescriptions and some of the notebooks with the help of contemporary pharmacopoeias shows that eye diseases were the most prevailing ailments. Dozens of fragments concerned with ophthalmology from many different medical books dealing with eye diseases are more evidence of this.<sup>23</sup> Other ailments were skin diseases, headaches, fevers, internal diseases (liver), intestinal problems, and haemorrhoids, as well as many others such as urinary trouble, ulcers, swellings, cough, and gynaecological illnesses (see table 3).

Palaeographic and linguistic analysis of the prescriptions might in the future provide information on the background of their writers by ascertaining the dialects they used (their geographic origin, background, and more precise dating), and the languages and dialects most common in the daily life of medieval Cairo.

Nevertheless, the most important information emerging from the prescriptions is that only a few of the formulas were copied from theoretical medical literary sources. These are mainly works such as Abū al-Munā al-Kūhīn al-ʿAṭṭār's<sup>24</sup> *Minhāj al-dukkān*<sup>25</sup> or Ibn Abī al-Bayān's<sup>26</sup> *al-Dustūr al-bimāristānī*.<sup>27</sup>

Very few prescriptions have been published so far. One deals with how to become stout (found in MS D.W. Amram f. 2v. preserved at the University of Pennsylvania, Philadelphia),<sup>28</sup> and another<sup>29</sup> was published by Goitein.<sup>30</sup>

<sup>22</sup> See, e.g., T-S K25.116; T-S Ar.34.305.

<sup>23</sup> Isaacs & Baker, see indices.

<sup>24</sup> Kohen, al-Attar.

<sup>25</sup> T-S Ar.30.65; T-S Ar.39.274; T-S Ar.41.71.

<sup>26</sup> Ibn al-Bayan.

<sup>27</sup> T-S Ar.42.67; T-S NS 297.17; T-S Ar.41.81.

<sup>28</sup> Goitein, Society, II, p. 581 note 3.

<sup>29</sup> T-S Ar.30.65.

<sup>30</sup> Goitein, Society, II, p. 267.

Table 3 Prescriptions for symptoms and diseases.

Symptoms, diseases and treatments	Fragments (examples)
Eye	T-S K14.32; T-S K.25.83, T-S Ar. 32.20; T-S AS 147.92, T-S AS 148.22; T-S AS 153.89; T-S AS 161.23
Headache	T-S Ar.39.20; T-S Ar.30.286 (Maimonides); T-S 16.291
Purgative	T-S Ar.39.458; T-S Ar.30.280; T-S Ar.41.72
Cosmetics	T-S Ar.11.12; T-S Ar.35.363
Cough	T-S K.25.116; T-S AS 148.22
Skin diseases	T-S Ar.39.335; T-S Ar.43.47
Stomach	T-S Ar.44.222; T-S AS 180.15
Fever	T-S AS 155.277
Gynaecology	T-S Ar.43.47
Haemorrhoids	T-S Ar.44.181 (see figure 6)
Liver	T-S Ar.45.40
Lice	T-S Ar.43.54
Swellings	T-S AS 178.32
Teeth	T-S AS 182.77
Topical applications	T-S Ar.30.99
Ulcers	T-S Ar.43.47
Urinary system	T-S AS 152.90

### *Names of physicians and patients*

Interesting, even puzzling, is the above-mentioned fact that very few prescriptions bear the name of the patient or the disease, or a description of the symptoms. We suggest that this is due to the fact that the prescription was written by the physician who knew the patient, and both knew what the symptoms were and what disease the patient suffered from. There was no need to write this information down; the pharmacist too simply had to make up the formula and give it to the patient or a family member.

According to Goitein, the physician frequently saw patients in pharmacies, shops of potion sellers, etc. Sometimes the pharmacist wrote the prescription, in Hebrew script, according to the instructions of the physician, who added the patient's name in Arabic script.<sup>31</sup>

<sup>31</sup> Goitein, *Society*, II, p. 266.

*Prescriptions with patients' name*

T-S Ar.30.65—Karāmiyya (a woman from the Karām family, a common name in the 12th–13th century)<sup>32</sup>

T-S Ar.30.305—Ibn Khidr

T-S Ar.34.305 A—Hibat Allāh

T-S Ar.39.318 A—Dā'ud

T-S Or.1081.J.39—The elder Abū Yaḥyā (probably Nahray b. Nissīm).<sup>33</sup>

T-S NS 223.82–83—Twelve short prescriptions were found written on a single sheet of paper, and they all had names of males and females, some of whom were related: al-Nafūs, al-Damīriyya, *zawjat* Abraham (wife of Abraham?); Ibn Siḥān (son of Siḥān), *zawjat* Ḥasan (wife of Ḥasan), Maḥāsin (male), Bintuhu (his daughter), al-Najīb, *ibnuhu* (his son Farīj), Umm al-Zabbānī (mother of al-Zabbānī), *ibnuhā* (her son).<sup>34</sup>

Sometime a pious wish, as a way of confirmation, was added too. In several cases Goitein was able to identify the handwriting of the pharmacist who wrote the prescription (for example, T-S 1081.J.39; T-S Ar.30.65; T-S Ar.53.33).<sup>35</sup>

Preliminary study of various documents of the Cairo Genizah has revealed the names of more than fifty Jewish physicians who practised in medieval Egypt, mainly Cairo. A planned future project, using other contemporary historical sources, should produce more information about each physician and his life and work. The same future project aims to shed light on some other cultural, social, and inter-religious issues regarding medical practitioners in Muslim Egypt.<sup>36</sup>

*Theoretical medical literary sources of formulas that were copied*

As mentioned, two books written by members of the community were among those most popular for the Genizah practitioners according to the number of fragments found and recognized as deriving from them, and according to the similarity of content of original Genizah prescriptions. These are the books by al-Kūhīn al-‘Aṭṭār<sup>37</sup> and Ibn Abī al-Bayān.<sup>38</sup>

<sup>32</sup> Goitein, *Society*, II, p. 267, note 44.

<sup>33</sup> Goitein, *Society*, II, p. 266, note 29.

<sup>34</sup> Lev & Niessen; see figure 7.

<sup>35</sup> Goitein, *Society*, p. 266.

<sup>36</sup> Lev, *Work*.

<sup>37</sup> Kohen, *al-Attar*.

<sup>38</sup> Ibn al-Bayan; T-S 43.270, see figure 8.



B. Cairo Genizah M.M. lists, their importance, and their contribution to the research

Lists of *materia medica* may be of various origin: inventories of pharmacies compiled for establishing or dissolving partnerships, for commercial orders, or for tax purposes; pharmacists' invoices and order forms for substances, especially those of wholesalers sent to retailers and vice versa.

These are among the best sources for the study of practical *materia medica* and the reconstruction of the community's inventory of practical M.M. Goitein, for example, points out consignments, one of fifty-four items, another of thirty-four.<sup>41</sup> The drugs listed are known from other sources, but in this case all were carried at the same time by one retailer; the fragments mention weights and prices as well.<sup>42</sup> Invoices to individuals are common, and they teach us about transactions, payments, and medicinal substances used at that time. Some invoices note quantities and prices, others have only the prices.<sup>43</sup>

In general, the seventy-one original M.M. lists found in the Genizah lack any headings that might explain their uses. However, since they are different from merchants' letters dealing with commerce in *materia medica* and give no instructions for the use or preparation of formulas (as is usually found in prescriptions), they were identified as M.M. lists. Some are written in Judaeo-Arabic (26), but the vast majority are written in Arabic (45). In some cases they appear as rows with written quantities,<sup>44</sup> in other cases the lists are written as long columns,<sup>45</sup> sometimes on very narrow and long or large sheets of paper.<sup>46</sup> Occasionally the quantities are in Arabic words,<sup>47</sup> at other times in Hebrew script,<sup>48</sup> in a few cases in Coptic numerals,<sup>49</sup> and rarely in several of these forms together.<sup>50</sup> These lists were apparently used by pharmacists for professional and business purposes as inventories of *materia medica*, records,

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<sup>41</sup> T-S Ar.30.274; see figure 10.

<sup>42</sup> Goitein, *Society*, II, p. 268.

<sup>43</sup> T-S Ar.30.165.

<sup>44</sup> T-S Ar.35.229; T-S Ar.43.315.

<sup>45</sup> T-S Ar.30.274; T-S Ar.39.450.

<sup>46</sup> T-S Ar.39.487; see figure 11.

<sup>47</sup> T-S AS 179.56.

<sup>48</sup> T-S Ar.43.315.

<sup>49</sup> T-S Ar.39.487.

<sup>50</sup> T-S Ar.30.274.

orders, or even receipts. Orders to *sharābiyyūn* (sellers of potions) were found and studied as well.<sup>51</sup>

The lists furthermore point directly to the existing trade in these substances and the place they occupied on the shelves of the pharmacies that could be found in the lanes and alleys of the Jewish quarter of Cairo.

None of the lists is written in Hebrew. The longest list contains sixty-three identified substances out of eighty-four substances found in all the Judaeo-Arabic lists together. The average number of substances in the short lists (up to 10 substances) is six, and in the long ones (more than 10 substances)—twenty-six.

Two hundred and six medicinal substances are mentioned in all the lists, of which 168 are of plant origin, sixteen are of animal origin, and the remaining twenty-two are inorganic (table 4).<sup>52</sup>

Table 4 Medicinal substances recorded in lists of M.M. found in the Genizah

Origin	Number	%
Plant	168	81.6
Animal	16	7.8
Inorganic	22	10.6
<b>Total</b>	<b>206</b>	<b>100</b>

Merchants' letters contain excellent information for other aspects of this research: they mention drugs' names and their origin, and we can learn about routes and other aspects of the drug trade of that era, for example, between Cairo and Alexandria.<sup>53</sup> Also, there is information on imports of drugs to port cities, as in the cases of the Rif and Cairo.<sup>54</sup> One such fragment is the subject of a book by Dietrich, which describes the trade in medicinal substances between India and other countries in the Far East and Egypt.<sup>55</sup> However, these documents were not used as main sources in our research since they do not have direct relevance for medicinal uses. A large portion of the substances mentioned in merchants' letters were also used by members of this medieval society as

<sup>51</sup> T-S Ar.54.19.

<sup>52</sup> See the complete list, with information about each fragment of lists of M.M., in Part D, Appendix 5.

<sup>53</sup> DK VIII.

<sup>54</sup> T-S 10J17.12.

<sup>55</sup> Dietrich, Egypt.

foodstuffs, spices, and condiments, and for cosmetics and industries (tanning, dyeing, etc.).

C. *Cairo Genizah 'medical' letters, their importance,  
and contribution to the research*

Letters were written by medical practitioners and patients, or to medical authorities or institutions.<sup>56</sup> Some letters written by Maimonides containing medical advice and other issues have been discovered, and they mention medicinal substances.<sup>57</sup> We regard these specific letters as a kind of prescriptions, hence as more evidence of the practical use of these substances.<sup>58</sup> An interesting example is found in a letter written by Maimonides in which he recommends drinking two cups of milk a day as a treatment (T-S 10J20.5).<sup>59</sup>

*Other outcomes from the study of Genizah medical documents*

*Materia Medica and Halacha (Jewish law)*

One of the most interesting aspects of the medicinal substances used by the members of the Jewish community of medieval Egypt as a whole is *kashrut* (keeping kosher: fitness in accordance with the Jewish law), namely consuming or using substances of unclean animal origin. As mentioned in the introduction (Part A, chapter 1) no historical evidence of the existence of a Jewish hospital in medieval Cairo has been found so far, nor any reference to Jewish patients making any use of Muslim “public” hospitals.<sup>60</sup> We believe that this was due to Halachic concerns: Jews most probably refrained from using such services on account of their inability to uphold the dietary laws or to ensure the religious purity of the medicines in an institute that operated under Muslim authorities and an Islamic religious outlook. The members of the Jewish community were treated by private Jewish practitioners in case of need.

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<sup>56</sup> Isaacs & Baker refer to 28 letters related to medicine in the index of their catalogue.

<sup>57</sup> E.g., T-S Ar.46.97; T-S Ar.30.286; see also Stern.

<sup>58</sup> See the list of letters in Part D, Appendix 5.

<sup>59</sup> Goitein, Letter.

<sup>60</sup> Goitein, Society, II, p. 133.

The use of animals as medicinal substances is well known and documented in the medieval literature,<sup>61</sup> as well as in traditional medicine in the Middle East.<sup>62</sup> In most cases these substances belonged to the category of special medicines, that is, those whose 'science' was unclear or unknown, but whose effectiveness was proven by long and cumulative human experience. Maimonides, for example, devotes a whole chapter to such substances and their uses in his *Aphorisms*.<sup>63</sup>

The list of theoretical M.M. that we compiled from fragments of books found in the Genizah contains a sizable number of such substances: bear, beetle, camel, civet, crow, eagle, elephant, frog, hyena, lard, leech, lion, medical skink, Nile crocodile, ostrich, rhinoceros, swallow, torpedo-fish, turtle. Yet the lists of practical M.M. omit some altogether, and others appear very rarely. We presume that this is not because they were hard to get but because of Halachic problems. As examples of substances found, we may mention crab (1), cuttle-fish (4), earthworm (1), snail (2), spiny-tailed lizard (1), and silkworm (2).<sup>64</sup> Most of them were used externally, not internally, so the Halachic problem was avoided. Others were used as part of fragranced liquid, paste, or as incense, for example beaver (4), sperm whale (ambergris) (2), and snail operculum (*azfār ṭīb*) (1). Note that some of these aromatic substances were identified by several medieval Jewish commentators such as Maimonides and Rabbi Sa'adya Gaon with the Temple incenses.<sup>65</sup>

The use of mumie (1), adder flesh (as a component of theriac) (1), she-ass milk (8), and different aphids (lac (6) and kermes (1)), is widely mentioned in the Halachic literature, some of which was written in medieval Egypt. Most of the religious authorities tended to allow medical use of these substances, mainly when patients were gravely ill for life saving purposes, or later, when the medicine or substance had undergone metamorphosis and lost its original shape.<sup>66</sup>

Finding records for the practical medical uses of such substances in the Genizah documents thus confirms the medieval reality: unclean animals could be used when necessary.

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<sup>61</sup> Lev, Animals.

<sup>62</sup> Lev, Zootherapy.

<sup>63</sup> Maimonides, *Aphorisms*, chapter 22; Zamir.

<sup>64</sup> See in detail, Part C, Chapter 7.

<sup>65</sup> Amar, Incense; Amar, Temple.

<sup>66</sup> Shemesh; Amar, Mummification; Amar, Theriac.



*Quasi materia medica*

Quasi-medicine in the Genizah fragments is extensive, and was used whenever the sickness did not respond to the 'scientific' or 'learned' methods of treatments. Quasi-medicine included several types of treatment such as amulets, diagrams, crosses, astrological predictions, and other supernatural aids and spirits. We have kept the quasi-medical *materia medica* separate from the rest as it is not conventional medicine; still, both methods often used the same materials.<sup>67</sup>

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<sup>67</sup> Isaacs & Baker, pp. xii–xiii.

## CHAPTER FIVE

### INVENTORY OF PRACTICAL *MATERIA MEDICA* OF THE GENIZAH PEOPLE, ITS ANALYSIS, AND COMPARISONS WITH THE THEORETICAL INVENTORY

The main goal of this study has been to learn about the practical medicinal uses of various substances by the members of the Jewish community of Cairo as a reflection of Mediterranean society as a whole. We need to assess this information in relation to the medical professions prevailing in this region in the medieval period and the contribution of the Arabs to medicine<sup>1</sup> as well as pharmacy,<sup>2</sup> mainly in the subject of this book i.e. medicinal substances.

In this chapter we discuss the reconstructed inventory of practical *materia medica*, which is based upon documents such as prescriptions, lists of *materia medica*, and 'medical' letters.<sup>3</sup> We also consider the theoretical inventory of *materia medica*, which is based on medieval medical books found in the Genizah. The presentation, analysis, and comparison of these two issues are the core of this chapter, although other related subjects are addressed too.

#### A. *Reconstructed inventory of practical materia medica*

As noted, the reconstructed inventory of practical *materia medica* is based on medicinal substances that feature in prescriptions and letters written by medical practitioners of the Jewish community of Cairo, and recorded in lists of *materia medica* written by pharmacists, drug sellers, and drug traders. These medicinal substances were identified, learned, arranged in a mini database and analysed.<sup>4</sup>

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<sup>1</sup> Ali; Conrad; Savage-Smith, *Medicine*; Hamarneh, *Diet*; Hamarneh, *Sources*; Johnstone.

<sup>2</sup> Ali & Qadry; Hamarneh, *Climax*; Hamarneh, *Development*; Hamarneh, *Origins*; Hamarneh, *Rise*.

<sup>3</sup> These were considered in detail in the previous chapter.

<sup>4</sup> See the complete detailed list of practical M.M. in Part D, Appendix 1.

The inventory comprises 278 substances, of which 224 (80.6%), the great majority, are of plant origin; 31 substances (11.1%) are of inorganic origin, and 23 (8.3%) are of animal origin. The figures and their division by substance origin are set out in table 5.

Table 5 Total data of the inventory of practical *materia medica* of the medieval Genizah people.

Origin	Number	%
Plant	224	80.6
Inorganic	31	11.1
Animal	23	8.3
<b>Total</b>	<b>278</b>	<b>100</b>

Our main aim is to evaluate and analyze the figures and subdivisions of the reconstructed inventory of the Genizah people by comparing it with present-day traditional practical inventories of some ethnic groups, as well as traditional societies with a similar social background and of the same geographical area, namely the Middle East and North Africa. These data are from surveys of markets in Egypt, Israel, Jordan and Syria, and from inventories drawn up in studies of medicinal substances used by Jewish and Muslim ethnic groups. They are presented in Table 6.

Table 7 clearly shows that the size of the Genizah's practical *materia medica* inventory (278 substances) is close to the average size (284) of the other inventories that appear in the table. The division of the contents of traditional inventories of present-day Middle Eastern societies and ethnic groups by substance origin is also similar, in absolute figures and percentages (see table 7).

#### *Analysis of the inventory of practical materia medica*

Table 5, 6 and 7 show that the reconstructed inventory is clearly of the usual size, as are its subdivisions according to substance origin. These subdivisions are treated in the next section, giving the figures and the history of the medicinal uses of each group (plant, inorganic, and animal origin).

Table 6 Division by origin of traditional medicinal substance inventories of some countries and Jewish and Muslim ethnic groups.<sup>5</sup>

Origin	PG	%	EG	%	MIS	%	SY	%	JO	%	MA	%	YJ	%	IJ	%	NB	%
Plant	223	80.2	417	82.7	264	85.1	189	77.5	236	77.6	273	88	151	83	150	82.9	193	77.2
Inorganic	31	11.2	46	9.1	19	6.1	31	12.7	30	9.8	25	8.1	10	5.5	15	8.3	15	6
Animal	24	8.6	41	8.2	20	6.5	11	4.5	29	9.6	12	3.9	21	11.5	16	8.8	42	16.8
Other	–	–	–	–	7	2.3	13	5.3	9	3	–	–	–	–	–	–	–	–
<b>Total</b>	<b>278</b>	<b>100</b>	<b>504</b>	<b>100</b>	<b>310</b>	<b>100</b>	<b>244</b>	<b>100</b>	<b>304</b>	<b>100</b>	<b>310</b>	<b>100</b>	<b>182</b>	<b>100</b>	<b>181</b>	<b>100</b>	<b>250</b>	<b>100</b>

**Sources for the practical traditional and ethnic inventories in modern times**PG – Practical inventory of medieval Genizah people.<sup>6</sup>EG – Cairo markets 19–20th centuries.<sup>7</sup>MIS – Survey of markets in Israel.<sup>8</sup>SY – Survey of markets in Syria.<sup>9</sup>JO – Survey of markets in Jordan.<sup>10</sup>MA – Survey of markets in Morocco.<sup>11</sup>YJ – Yemeni Jews in Israel.<sup>12</sup>IJ – Iraqi Jews in Israel.<sup>13</sup>NB – Bedouins in southern Israel (Negev).<sup>14</sup>

<sup>5</sup> Information on the uses of *materia medica* in ethnic groups such as Yemeni or Iraqi Jews in Israel reflects minority groups dwelling far from their places of origin; therefore, the data might be incomplete in comparison with those in the country of origin.

<sup>6</sup> Lev & Amar, Practical.

<sup>7</sup> Meyerhof, Bazar; Ducros; Estes & Kuhnke.

<sup>8</sup> Lev & Amar; Lev & Amar, Ethnic.

<sup>9</sup> Honda et al.; Sanagustin.

<sup>10</sup> Lev & Amar, Jordan.

<sup>11</sup> Ahmed et al.

<sup>12</sup> Reiani.

<sup>13</sup> Ben-Yakov.

<sup>14</sup> Abu-Rabia.

Table 7 Division of the reconstructed Genizah inventory of practical M.M. and its comparison with other inventories.

Origin	Number	%	Size range of data in table 6	Range (%)	Average
Plant	224	80.6%	150–417	72.2–88%	81.7%
Inorganic	31	11.1%	10–46	5.5–12.7%	8.2%
Animal	23	8.3%	11–41	3.9–16.8%	8.7%
<b>Total</b>	<b>278</b>	<b>100%</b>	<b>171–504</b>	–	<b>286</b>

### I. Medicinal substances of plants origin

Two hundred and twenty-four substances of plant origin are recorded as being in practical use for medicinal purposes by the Genizah people.<sup>15</sup> This number is well within the size range (150–417) of substances of plant origin in other practical inventories (see table 6). It is 80.6% of the total number of materials and accords with the percentage range (72.2–88%) and average (81.7%) of other inventories (see table 7).

Plants have been used as medicinal substances since prehistoric times.<sup>16</sup> When man discovered the nutritious quality of edible plants he also came to realize that other plants, and sometimes the edible plants themselves, had medicinal value.<sup>17</sup> Various sources describe the use of natural substances for healing in ancient civilizations. From these we learn that plants were the main source for the concoction of remedies. Here we describe few milestones along the route.

Much information on ancient Chinese medicine (from the third millennium BC) was compiled into a book in Chinese called *Tsao Pen*<sup>18</sup> which contains thousands of medical prescriptions,<sup>19</sup> most of them of plant origin and based on well-known plants such as cannabis and rhubarb. In Egypt the find of the Ebers Papyrus yielded 877 medicines and prescriptions, mostly of plant origin such as aloe, barley (beer), castor (oil), cedar, centaury, cumin, elder, fennel, fig, flax, frankincense, garlic,

<sup>15</sup> See the complete list of medicinal substances of plant's origin in Part D, Appendix 1.

<sup>16</sup> Palevitch, plants p. 264.

<sup>17</sup> Yaniv, p. 20.

<sup>18</sup> Read. & Pah.

<sup>19</sup> On Chinese medicine in detail, see Gordon, *Medicine*, pp. 355–390. On pharmacology, see Kremers & Urdang, pp. 3–5.

grapevine (wine and vinegar), henbane, juniper, lentisk, mandrake, myrrh, olive (oil), onion, poppy seed, saffron, tarragon, and yeast.<sup>20</sup>

The great majority of medicinal substances mentioned in other sources from antiquity, such as the Bible, were also from the plant world.<sup>21</sup> Scholars have identified 25–30 in the Bible that served as remedies.<sup>22</sup> Among the more important plants are colocynth, marjoram, balsam, onion, mandrake, cumin, prickly saltwort (*Salsola kali*), black cumin, poison hemlock and fig.<sup>23</sup> In Mesopotamia, medical sources in documents discovered in Nippur (21st cent. BC) mention the following: cassia, date, dogwood, fig, giant fennel, myrtle, pear, prickly saltwort and willow.<sup>24</sup> The Code of Hammurabi, king of Babylon (18th cent. BC), contains descriptions of the use of medicinal plants such as cassia, henbane, liquorice, and mint.<sup>25</sup> The royal library of Ashurbanipal (7th cent. BC)<sup>26</sup> has references to about 250 kinds of plants, including iris, oleander, olive (oil), jasmine, cassia, mint, cinnamon, liquorice, fennel, henbane, and barley (beer).<sup>27</sup> The Greek Hippocrates mentions about 400 medicinal substances, most of them (91%) being plants.<sup>28</sup> According to legend, Theophrastus, Aristotle's pupil, inherited Aristotle's plant garden, which contained many varieties of plants from all over the world. Theophrastus, who dedicated his life to plant research, wrote many books in which he prominently describes medicinal plants. The most important of his works is *The History of Plants*<sup>29</sup> in which more than 500 medications are listed.<sup>30</sup> During his travels Dioscorides, who was a physician in Nero's army, collected many plant specimens and examined their medicinal virtues. His famous work *De Materia Medica*<sup>31</sup> describes more than 600

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<sup>20</sup> Bryan. The identification of the various substances was made by the editor and translator of the book. On healing through ancient Egyptian medicines see Nunn, pp. 136–162; Estes, Egypt; Stetter, pp. 107–122.

<sup>21</sup> Löw; Feldman; Feliks, World; Moldenke; Harrison; Duke; Preuss; Zayyda; Ulman; Shoshan; Palmer; Rosner Medicine. On pharmacology in this period see Hamarneh, Origins, pp. 17–21.

<sup>22</sup> Amar identified 120 kinds of plants, some of which can be defined as medicinal plants. See Amar, Substances, p. 51.

<sup>23</sup> Yaniv, p. 21; Jacob; Ulman, p. 194.

<sup>24</sup> See in detail Kramer.

<sup>25</sup> Yaniv, p. 20.

<sup>26</sup> The original tablets are now located in the British Library. See Thompson, Texts.

<sup>27</sup> Hakim, p. vii. Identification of the various substances was by the editor.

<sup>28</sup> Riddle, Tradition, pp. 47–61.

<sup>29</sup> Theophrastus.

<sup>30</sup> Kremers & Urdang, pp. 14–27.

<sup>31</sup> Dioscorides. On Land of Israel aspects see also Zilberstein.

kinds of plants, among which are acacia, aconite, almond, aloe, balsam, buckthorn, cumin, dill, grapevine (vinegar and wine), liquorice, mandrake, mint, poison hemlock, olive (oil), poppy seed, rose (oil), and tarragon. Pliny the Elder, a contemporary of Dioscorides, is the author of *Historia Naturalis*,<sup>32</sup> eight of whose 37 volumes treat medicinal plants. It is interesting that the original source of some of these substances indicated by physicians of the classical world is the Levant; among them are persimmon (balsam) grown in Judaea, elephant's ear, fennel and tamarisk found in abundance in Syria, onion and henna from Ashkelon, and storax ointment produced in Syria.<sup>33</sup>

The historian Immanuel Low lists about 400 kinds of plants mentioned in the Talmud,<sup>34</sup> 70 of which are defined as medicinal plants. Among the medicinal plants mentioned by the Jewish Sages are asparagus, black cumin, cabbage, cumin, dodder, garlic, grape vine (wine and vinegar), lavender, leek, marrow (squash), olive (oil), onion, pepper, pine gum (resin), radish, rose (oil), and watercress. The medical tradition formulated during the early Islamic period indicates the use of plants such as black cumin, cedar, citron, date (both fruit and kernel), eggplant, fig, garlic, henna, onion, rice, and watermelon.<sup>35</sup>

Opening new trading routes and widening the range of opportunities were only some important advantages that emerged from the Islamic conquest. The Muslim rulers took advantage of the fact that various cultures existed under their regimes. They transferred cheap manpower, technical knowledge, agricultural technologies and processing methods from place to place. These historical processes made possible the transfer of new crops and products (some of limited distribution), mainly from south-east Asia, to the Middle East, North Africa, and Europe. Among these we may mention banana, cotton, eggplant, Indian hemp, lemon, orange, spinach, and sugar cane.<sup>36</sup>

Various parts (root, seeds, leaves, fruit, bulb, flower, etc.) of hundreds of plants, as well as extracts, gums, resins, oils, and other products, were used in Muslim medicine. Most were plants already used by Greek and Roman physicians and pharmacologists and mentioned in classical medical literature; a few were medicinal plants introduced by the

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<sup>32</sup> Pliny.

<sup>33</sup> In this connection see also Amar, *Substances*, pp. 54–55.

<sup>34</sup> Low; Perelman, I, pp. 50–98.

<sup>35</sup> See in detail Ibn al-Qayyim.

<sup>36</sup> Amar, *Agriculture*, pp. 334–336; Watson, *Innovation*.

Muslims.<sup>37</sup> The medical qualities of these plants and their products are largely described in the medieval literature, mainly Indian hemp and sugar cane. Moreover, the opening of the new trade routes facilitated the transport of various goods and products from all over the ancient world, including medicinal plants, perfumes, and spices such as camphor, clove, mace, myrobalan, and rhubarb.<sup>38</sup> The development of alchemy and dyeing expanded the use of many inorganic materials and minerals.<sup>39</sup> In that way the inventory of *materia medica*, mainly in the East (the Muslim world)<sup>40</sup> but also in the West (Europe), became enriched with dozens of new substances.

Isaacs tried to explain the enormous number of plants in the *materia medica* inventory as connected with the flourishing art of herbalism among the Arabs;<sup>41</sup> however, this proportion, where plants account for 70–90% of *materia medica* inventories, is found in different sources from classical medical books to present-day traditional medicine.<sup>42</sup>

## II. Medicinal substances of inorganic origin

Thirty-one inorganic substances are recorded as being in practical use for medicinal purposes by the Genizah people.<sup>43</sup> The number is relatively high within the size range (10–46) of substances of inorganic origin in other practical *materia medica* inventories (see table 6). It is 11.1% of the total number of materials in the inventory and is situated at the top of the percentage range (5.5–12.7%), far above the average (8.2%) (see table 7).

This can be explained by Egypt's being an important producer of minerals (borax, alum), as well as an entreport for such substances (copper, iron, lead, mercury, earth, silver).<sup>44</sup> The high rate of eye and skin diseases that has prevailed in Egypt since early times could be another explanation. Inorganic substances have played an important part of the treatment of these diseases from antiquity to the present (e.g., zinc).<sup>45</sup>

<sup>37</sup> See figures and details of trade in medicinal plants in this chapter.

<sup>38</sup> Rogers, p. 84; Levey, *Pharmacology*, pp. 173–174.

<sup>39</sup> Levey, *Pharmacology*, p. 173; Hamarneh, *Chemical*; Amar & Seri, pp. 44–45.

<sup>40</sup> See e.g. data in Table 6 in this chapter.

<sup>41</sup> Isaacs & Baker, p. xi.

<sup>42</sup> Lev, *Medicinal* p. 281; Lev, *Materia Medica*.

<sup>43</sup> See the complete list of medicinal substances of plant origin in Part D, Appendix 1.

<sup>44</sup> Goitein pointed out some of these trading sources and directions: Goitein, *Society*, I, pp. 153–154, 209–224.

<sup>45</sup> See in detail Part C, Chapter 6.



Various minerals, metals, and stones formed natural medicinal substances in early times and in many different cultures. Some of these substances were easily available to man in his natural habitat; others were collected in close vicinity to him, a few were mined and processed by industrial methods, and the more expensive ones were brought in over the trade routes from near or distant lands.<sup>46</sup>

It is known historically that in ancient Egypt various inorganic substances were used: potassium nitrate, asphalt, iron, copper sulphate, salt, magnesium, sodium carbonate, lead, and white lead.<sup>47</sup> In medical documents discovered in Mesopotamia (7th century BC), about 120 kinds of metals, stones, and mineral were identified as having been used for remedies, including alum and bitumen (asphalt). These substances constituted 32% of the total medicinal substances that were mentioned.<sup>48</sup> Even ancient Chinese medicine made use of inorganic substances such as alum, iron, sulphur, and mercury.<sup>49</sup>

Classical medicine also applied minerals and metals. Hippocrates mentions hundreds of substances that have been identified and studied, including nine minerals and six metals, such as alum, arsenic, iron, sodium sulphate, sulphur, clay (three kinds), salt, natron (saltpetre), lead, white lead, and copper. These substances comprised about 6% of the total.<sup>50</sup> Dioscorides describes the use of about 96 kinds of inorganic substances, including about five kinds of metals, 28 kinds of minerals, and 27 kinds of stones, such as asphalt, zinc, antimony, iron, sulphur, kinds of clay, salt, copper, sodium, lead, calcium, and carbon. They comprise about 10% of the inventory of the medicinal substances used by this important physician. Other minerals as well, which were known to be poisons, such as mercury and arsenic, were used as remedies.<sup>51</sup> The Jewish Sages also mention certain minerals that were used as remedies, such as lime, "Sodom salt", lead, and kohl.<sup>52</sup> In Neo-Aramaic (Syrian) medicine, substances such as potassium powder, glass, and white lead appear.<sup>53</sup>

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<sup>46</sup> Lev, *Inorganic*.

<sup>47</sup> Bryan.

<sup>48</sup> Thompson, *Texts*; Hakim, p. vii. On substances and the chemical industry see Levey, *Chemistry*.

<sup>49</sup> Gordon, *Medicine*, pp. 355–390; Kremers & Urdang, pp. 3–5.

<sup>50</sup> Riddle, *Tradition*, p. 60.

<sup>51</sup> Riddle, *Dioscorides*, pp. 146–167.

<sup>52</sup> Perelman, I, pp. 50–98; Preuss, pp. 433–437.

<sup>53</sup> Budge, Pt. II. For details see Bodenheimer, pp. 128–134.

In Arab medicine, inorganic substances form a small but important component of the inventory of medicinal substances. For example, the physician al-Kindī (9th cent. CE) describes the use of about 300 substances, including 27 minerals and metals comprising about 10% of all the substances.<sup>54</sup> Maimonides (12th cent. CE) notes the use of approximately 42 kinds of minerals, stones, and metals, comprising about 11% of all the substances mentioned.<sup>55</sup> Hamarneh estimates that in the 10th century the use of chemicals and minerals in Arabic medicine reached its peak as a result of the combined knowledge deriving from the writings of classical physicians, information about eastern medicine, and well-developed commercial ties across the various parts of the Islamic empire, and the connections between it and other countries.

The development of alchemy created a large demand for inorganic substances and minerals, along with new mining methods and production techniques, during the Islamic period (10th century).<sup>56</sup> Another example is gold production in the Rift Valley in the same period.<sup>57</sup>

This surge is reflected in the many references to inorganic substances found in the writings of physicians such as al-Rāzī (865–925 CE), al-Majūsī (d. 994 CE), and al-Zahrāwī (d. 1013 CE), who practised medicine in Cordoba.<sup>58</sup>

Saladino d'Ascoli, the Italian chemist (15th cent. CE), describes the use of about 26 kinds of metals and minerals and about ten kinds of stone in Europe in the Middle Ages. These include asphalt, arsenic, sulphur, gold, types of clay, silver, types of salt, and lead.<sup>59</sup> A similar situation and the use of identical materials occurred in the framework of traditional medicine in the Middle East. In Iraq, for example, about 17 minerals and metals are described, such as alum, antimony, arsenic, sulphur, kinds of clay, fossils, copper, natron, sodium carbonate, and lead. These substances comprise about 5% of the materials in the inventory.<sup>60</sup>

In a research study of traditional medicinal substances from natural sources that was conducted in Pakistan during the 1960s, the use of

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<sup>54</sup> al-Kindi. On the production and use of chemical substances in Iran and Iraq in the 10th century, see also Stapleton.

<sup>55</sup> Maimonides, *Glossaire*. Cf. Stapleton, pp. 317–324.

<sup>56</sup> Amar & Seri, p. 45.

<sup>57</sup> Amar, *Gold*.

<sup>58</sup> Hamarneh, *Chemical*.

<sup>59</sup> Saladino, pp. 116–117. In connection with the use of minerals in European medicine in the Middle Ages, see Riddle, *Minerals; Riddle, Stones*.

<sup>60</sup> Hooper, pp. 189–193.

43 minerals and metals was noted, comprising 12.5% of all the medicinal materials reviewed.<sup>61</sup>

In a survey conducted in shops selling medications in Syria during the 1970s, 12.7% of the medicinal substances were inorganic. The inventory of medicinal substances of Iraqi Jewry contains a description of the use of about nine kinds of such substances, altogether comprising about 5% of the materials mentioned.<sup>62</sup> In Jordan, 9.8% of the substances recorded in a similar survey conducted in 2000<sup>63</sup> were of inorganic origin, and in Israel the proportion was 6.1%.<sup>64</sup>

Fifteen inorganic materials are revealed in the sources as being in medical use in the Levant during the Middle Ages. From a statistical viewpoint they comprise about 5% of the inventory of materials—a finding that resembles that of the lists of materials in traditional medicine in our region, and is not unlike other lists of materials from the Middle Ages and the classical period.<sup>65</sup>

### III. *Medicinal substances of animal origin*

Twenty-four substances of animal origin are recorded as being in practical use for medicinal purposes by the Genizah people.<sup>66</sup> This number matches the size range of substances of origin in other practical inventories (see table 6). It is 8.3% of the total number of materials and is well within the percentage range (3.9–16.8%) and very close to the average (8.7%) (see table 7).

Living creatures, their body parts, and their products have been part of the inventory of medicinal substances since the earliest times in different cultures. Some were wild animals that were at times hunted to meet medical needs (e.g., the adder or the yellow scorpion), and others were domesticated animals such as cattle, goats, sheep, camels, dogs, and chickens, which were available to man in his natural habitat and they or their products served as food. The rarest and most expensive animals such as the musk deer (for its sexual glands) and the beaver

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<sup>61</sup> Ali et al. Another study, describing the identity of the substances and their uses was used for identification and the gathering of information: Ali & Mahdihassan, *Mineral*.

<sup>62</sup> Ben-Yakov, pp. 433–438. Cf. the list of medicinal substances of Yemeni Jewry: Reiani, nos. 151–171.

<sup>63</sup> Lev & Amar, *Jordan*.

<sup>64</sup> Lev & Amar.

<sup>65</sup> Lev, *Materials*, p. 45.

<sup>66</sup> See the complete list of medicinal substances of plant origin in Part D, Appendix 1.

(for its testicles) were imported via the trade routes from distant countries. In various sources, mainly from the Middle Ages, there are occasional descriptions of human products such as mother's milk, urine, and sperm. The use of such substances is also common in traditional medicine.<sup>67</sup> In ancient Egypt, substances derived from living creatures such as the bee (honey), lizard, centipede, bat, sperm whale (ambergris), and musk deer (gland) were used for medical purposes.<sup>68</sup> Medical lists discovered in Mesopotamia (Assyria) have descriptions of the medical uses of substances such as wax and animal fat,<sup>69</sup> and in ancient China use was made of substances such as the gland of the musk deer.<sup>70</sup>

Even in classical medicine, living creatures and their body parts were used. Hippocrates mentions the use of six kinds of animals and their body parts such as sea sponge, horns, eggs, and milk, constituting 2.5% of all the substances.<sup>71</sup> Dioscorides reports on the use of about 168 body parts and products of living creatures, which account for 10% of his inventory of medicinal substances.<sup>72</sup> The Jewish Sages also mention living creatures and their products, such as snakes, fish, honey, milk, cheese, and eggs, and also the body parts of animals and fowl such as spleen, heart, lung, liver, and stomach.<sup>73</sup> Neo-Aramaic (Syrian) medicine notes the use of substances such as beaver testicles, honey and wax, dung (of the bat and lizard), the glands of the musk deer, milk, frog, and earthworm. Use was also made of animal body parts such as liver, horn, and gall.<sup>74</sup>

Arab folk/religious medicine—"al-Ṭibb al-Nabawī" or the medicine of the Prophet—used chicken eggs, cow cheese, and bee honey.<sup>75</sup> The physician al-Kindī describes the medical use of 22 kinds of animals such as coral, squid, medical skink, pigeon (dove), lizard, crab, mouse, and nacre; body parts such as beaver testicles, cattle gall and fat, and horn of rhino and goat; also products such as honey and wax, milk, and eggs. All

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<sup>67</sup> Lev, *Animals*.

<sup>68</sup> Bryan.

<sup>69</sup> Thompson, *Texts*; Hakim, p. vii.

<sup>70</sup> Gordon, *Medicine*, pp. 355–390; Kremers & Urdang, pp. 3–5.

<sup>71</sup> Riddle, *Tradition*, p. 60.

<sup>72</sup> Riddle, *Dioscorides*, pp. 146–167.

<sup>73</sup> Perelman, I, pp. 50–98.

<sup>74</sup> Budge, *Part II*; Bodenheimer, pp. 128–134.

<sup>75</sup> Ibn al-Qayyim, pp. 7–9.

these constitute 7% of the total substances.<sup>76</sup> Maimonides notes the use of about 28 animal substances, constituting 7% of the total.<sup>77</sup>

The zoologist Bodenheimer summarized the writings of Arab physicians, geographers, and Muslim encyclopaedists, who describe the use of living creatures in medicine. ʿAlī b. Rabbānāl-Ṭabarī (9th cent. CE), for example, expounds the medical use of human products, goose, deer, rabbit, lion, beaver, falcon, cattle, camel, bear, fish, stone marten, wolf, partridge, skink, rat, pig, donkey, stork, pigeon (dove) sheep, dog, snake, leopard, horse, swallow, crab, raven, goat, bat, spider, leech, scorpion, elephant, mule, tortoise, hyena, frog, porcupine, earthworm, jackal, and chicken. Al-Idrīsī (12th cent. CE) lists, among others, ram, cattle, duck, squid, pig, snail, pigeon (dove), ibex, nacre, and rooster.<sup>78</sup>

Fifty-two animal extracts and products are recorded as being used for medicinal purposes in the medieval Levant.<sup>79</sup>

In medieval Europe, Saladino d'Ascoli describes the use of about 20 different animals, their body parts, and their products, including goose, ram, rabbit, lion, cattle, bee, bear, pig, donkey, cat, pigeon (dove), sheep, eagle, horse, goat, mouse, fox and chicken.<sup>80</sup> The use of these creatures is also maintained in regional traditional medicine. In Iraq, for example, twelve kinds of creatures feature, such as coral, cattle, camel, bee, fish, squid, sheep, nacre, and silkworm, which comprise about 3.7% of the substances in the inventory.<sup>81</sup> On the other hand, the inventory of the Jewish population of Iraq describes about ten kinds of substances constituting 5% of the comprehensive list of medicinal substances of the Jews in Iraq.<sup>82</sup>

Among the Sinai Bedouin, about 25 kinds of living creatures used for medicine are documented: adder, camel, fish, wolf, snail, donkey, lizard dung, shark, ant, crab, bat, ringed snake, scorpion, hyena, tortoise, nacre, wasp, fish, fox, hare, and shark ray.<sup>83</sup> The historian and physician Max Meyerhof described the medicine market in Cairo at the beginning

<sup>76</sup> al-Kindi.

<sup>77</sup> Maimonides, *Glossaire*.

<sup>78</sup> Bodenheimer, pp. 155–157.

<sup>79</sup> Lev, *Zootherapy*.

<sup>80</sup> Saladino, pp. 116–117.

<sup>81</sup> Hooper, pp. 189–193.

<sup>82</sup> Ben-Yakov, pp. 433–438. Cf. the list of medicinal substances of Yemeni Jews: Reiani, nos. 172–182.

<sup>83</sup> Levey, *Bedouins*, pp. 86–88.

of the 20th century, and noted that 41 of the 640<sup>84</sup> medicinal substances were of animal origin. Among the creatures mentioned are musk deer, coral, adder, beaver (testicles), bee (honey and wax), squid, meloid (beetle), scarab (beetle), snail, lizard, cat, ostrich, lizard, centipede, crab, bat (dung), leech, amber, tarantula, scorpion, elephant (ivory), pearl, nacre, rhino, cockroach, and crocodile.<sup>85</sup>

In Pakistan 31 organic substances (animals, their body parts, and their products) were noted, accounting for 9% of all substances in the inventory of traditional medicine.<sup>86</sup> Examination and research show that these substances are similar to those that served for medical purposes throughout history, regardless of geographical boundaries. Among the substances listed are coral, bee (honey and wax), squid, medical skink, silkworm, crab, spider, amber, pearl, nacre, hedgehog, and earthworm.<sup>87</sup> A survey conducted in Syria in the 1970s found that 4.5% of the substances traded by the medicine sellers in the market were of animal origin.<sup>88</sup> Similar data also arise from surveys in Jordan (9.6%)<sup>89</sup> and in Israel (6.5%).<sup>90</sup>

#### *Substances with other daily uses than medicine*

Many substances had uses other than medicinal; some had double or even triple uses, as the following examples show.<sup>91</sup>

- A. **Foodstuffs** (almond, apple, apricot, banana, barley, bean, beet, cabbage, carob, carrot, cattle products, celery, cherry, chicken products, chickpea, cucumber, eggplant, goat products, grape vine, hazelnut, honey, leek, lemon, lentil, lettuce, liquorice, melon, olive oil, onion, pear, plum, pomegranate, quince, radish, salep, spinach, sugar, tamarind, walnuts, watermelon, wheat).

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<sup>84</sup> This figure is the number of items in Meyerhof's list; however, it was analysed together with some other lists. The total number after comparing, identifying and filtering the data is presented in table 6 in this chapter (504).

<sup>85</sup> Bodenheimer, pp. 159–160.

<sup>86</sup> Ali et al.

<sup>87</sup> Ali & Mahdihassan.

<sup>88</sup> Honda et al.

<sup>89</sup> Lev & Amar, Jordan.

<sup>90</sup> Lev & Amar.

<sup>91</sup> Only leading examples are presented below.

- B. **Spices** (cardamom, cinnamon, clove, cubeb pepper, galingale, ginger, long pepper, pepper, nutmeg, saffron, tumeric).<sup>92</sup>
- C. **Herbs and condiments** (anise, basil, balm, caraway, coriander, cumin, dill, fenugreek, endive, fennel, garlic, hyssop, laurel, mint, mustard, rosemary, rue, salt).
- D. **Cosmetics** (aloe, henna, kohl, rose, soap, wax).
- E. **Perfumes** (ambergris, balsam, jasmine, musk).
- F. **Incense** (calamus, frankincense, ladanum, lentisk, musk, myrrh, spikenard).
- G. **Dyeing** (alum, henna, indigo, kermes, lac, madder, false saffron, pomegranate, saffron, wax).
- H. **Ink production** (alum, arsenic, gum arabic, pomegranate, vitriol)
- I. **Tanning** (oak galls, sumac, pomegranate, salts).
- J. **Other industries** (arsenic, borax, cinnabar, copper, cotton, gold, lead, mercury, papyrus, pearl, potash, salts, scoria, silk worm, silver, sulphur, wax, zinc).

*Trade and geographical origin—local, imported, and exported substances*

The reconstructed inventory of practical *materia medica* directly points to the existing trade in these substances and the place they occupied on the shelves of the pharmacies that could be found in the lanes and alleys of the Jewish quarter of Cairo.<sup>93</sup> Historical works on trade in the medieval Mediterranean have been published by Ashtor,<sup>94</sup> Goitein,<sup>95</sup> Gil,<sup>96</sup> Y. Lev,<sup>97</sup> Ben-Sasson,<sup>98</sup> Dietrich,<sup>99</sup> Stillman,<sup>100</sup> Yacoby,<sup>101</sup> and E. Lev.<sup>102</sup>

**Egypt** was one of the production centres of substances such as alum, cassia, flax, gum arabic, purging cassia, and sugar, but these are a minority in the inventory. Instead, we have chosen to set out here medicinal

<sup>92</sup> Hamarneh, Spices.

<sup>93</sup> See full lists Lev, lists.

<sup>94</sup> Ashtor; Ashtor, Europe; Ashtor, Levant; Ashtor, Spices; Ashtor, Sugar; Ashtor, Trade; Ashtor & Cervialli.

<sup>95</sup> Goitein, Society, mainly I, pp. 153–154, 209–222; Goitein, Jewry.

<sup>96</sup> Gil; Gil, Kingdom.

<sup>97</sup> Lev, Towns.

<sup>98</sup> Ben-Sasson.

<sup>99</sup> Dietrich, Egypt.

<sup>100</sup> Stillman.

<sup>101</sup> Yacoby, Trade; Yacoby, Commercial.

<sup>102</sup> Lev, Trade.

substances that were traded and used in Egypt. Some were imported from<sup>103</sup>

**India and south-east Asia:** cubeb (Socotra), cinnamon, clove, galin-gale, indigo, pepper, myrobalan, camphor, spikenard.

**Yemen:** alum, mineral mummy, screw pine (*Pandanus odoratissimus*), waras (*Flemingia sp.*).

**Arabia:** frankincense.

**North Africa:** coral, saffron, olive oil, soap, honey and wax (Tunisia).

**Sicily:** alum, coral, lead, sulphur, silk, cheese.

**Crete:** cheese, dodder of thyme.

**Europe:** cheese, coral, honey, saffron, lentisk, silk, copper, iron, lead, mercury, earth, silver.

**Levant** (Al-Shām, present-day Syria, Lebanon, and Israel): asphalt, almonds, rose, dried fruits, gull nuts, scammony, olive oil, soap, sumac, wax.

Others were exported to

**South-east Asia:** dodder of thyme, saffron.

**North Africa:** flax, different spices.

**Sicily:** flax, indigo, pepper, cinnamon, clove, sal ammoniac.

**Europe:** alum, pepper, cinnamon, clove, sugar.

**Levant:** safflower, meadow saffron, henna, purging cassia, mumie, salep, aniseed.

For a comparison, a study of similar issues in the medieval Levant showed that out of the 286 medicinal substances that were recorded as used medicinally in the medieval Levant, 99 were traded. Twenty-two substances, mainly spices from Asia, were transhipped through the Levant (to Europe), 16 others were only imported, and 61 were exported, mainly to Egypt (33) and Europe (25). Among the exports to Egypt were almonds, bean trefoil, berberry, borage, common wormwood, dog rose, fig, germander, grape vine, honey, hyssop, Jew's stone, mung bean, oak gall, olive oil, pear, peony, pistachio, pistachio resin, quince, saffron, stone pine, styrax, sumac, tragacanth, wax, white melilot.<sup>104</sup>

The widespread commerce in medicinal substances among the different trading centres in the medieval period is discussed in detail at

<sup>103</sup> Goitein pointed out some of these trading sources and directions: Goitein, Society, I, pp. 153–154, 209–224.

<sup>104</sup> Lev, Trade.



the end of this chapter. But the first signs of such activities might be seen in a book attributed to al-Jāḥiẓ (10th cent. CE)<sup>105</sup> and in the story of the Radhanite merchants. This was a family of merchants originating in the north-eastern part of Baghdad. Their commercial activity is mentioned by Arab geographers (Ibn Khurdādhbayh (9th cent. CE) and Ibn al-Faḥīh (10th cent. CE). According to these historical sources the Radhanites had four main routes: two maritime and two overland. In fact, this was an international network of Jewish merchants with trading ties all across the Islamic empire. Its agents were sent everywhere, from Andalusia in the extreme west of Europe to China in the farthest east of Asia.<sup>106</sup>

A remarkable conclusion that emerges from the perusal of the complete list is that at least some substances (cloves, cassia, purging cassia, sugar, rhubarb, mace, musk) were introduced to the Middle East, and later to Europe, by the Muslims.<sup>107</sup> This might rate as significant evidence of the contribution of the Muslims to pharmacy and medicine in general, and to the enrichment of the classical inventory of *materia medica* in particular.<sup>108</sup> It is interesting, though, that trade in several of the above-mentioned substances was in the hands of members of the Jewish community of medieval Cairo, who traded with India, Sicily, Syria, North Africa, and other ports and cities.<sup>109</sup>

#### *Most frequently used substances*

To discover more, we have chosen to present here the twenty most frequently mentioned, and hence most frequently used, substances (table 8). This list might teach us about market demands, trade, economy, and practical medical trends. Thereafter we will focus on and discuss in detail a few prominent substances with the aim of further understanding their importance in daily life, trade, diet, and medicine.

Clearly, apart from salt and honey all these substances are of plant origin. A few may have been of local provenance (gum arabic and sugar) while others were brought from the Levant (almonds, rose, endive). Many others were obviously imported into Egypt from south-east Asia (pepper, myrobalan, camphor, spikenard) and others from the western Mediterranean (saffron, lentisk).

<sup>105</sup> al-Jāḥiẓ.

<sup>106</sup> Gil, Kingdom, I, pp. 611–630; Gil, Radhanite; Ben-Sasson, Emergence.

<sup>107</sup> Lev, Materials, pp. 35, 289.

<sup>108</sup> Thompson, Alchemy, p. 102; Rogers.

<sup>109</sup> Goitein, Society, I, pp. 148–156, 209–224; Isaacs & Baker, p. xi; Dietrich, Egypt.

Table 8 The twenty medicinal substances most frequently used by members of the Jewish community of Old Cairo according to the Genizah fragments.

No.	English Name	Scientific Name	No. of mentions
1.	Myrobalan	<i>Terminalia sp.</i>	79
2.	Rose	<i>Rosa sp.</i>	71
3.	Almond	<i>Amygdalus communis</i>	41
4.	Pepper	<i>Piper nigrum</i>	34
5.	Endive (Chicory)	<i>Cichorium intybus</i>	34
6.	Saffron	<i>Crocus sativus</i>	34
7.	Spikenard (Nard)	<i>Nardostachys jatamansi</i>	32
8.	Liquorice	<i>Glycyrrhiza glabra</i>	32
9.	Sugar cane	<i>Saccharum officinarum</i>	31
10.	Lentisk	<i>Pistacia lentiscus</i>	31
11.	Grape vine	<i>Vitis vinifera</i>	29
12.	Salt	NaCl	26
13.	Basil	<i>Ocimum basilicum</i>	24
14.	Borage	<i>Anchusa sp. (italica and officinalis )</i>	24
15.	Honey		23
16.	Gum arabic	<i>Acacia nilotica</i>	21
17.	Aloe	<i>Aloe sp.</i>	21
18.	Sesame	<i>Sesamum indicum</i>	21
19.	Lemon	<i>Citrus limon</i>	20
20.	Camphor	<i>Cinnamomum camphora</i>	20

### B. Inventory of the theoretical Materia Medica

The inventory of theoretical *materia medica* mentioned in fragments of medical books found in the Cairo Genizah<sup>110</sup> consists of 414 substances. Of these, 310 are of plant origin, 35 are of animal origin, and 69 are of inorganic origin (see table 9).

The number of substances of animal origin is high, and some are exotic and would be very hard to obtain, for example, elephant bile, wolf gall, hyena bile, crow's gall, bear bile, lard, lion bile, medical skink, rhinoceros fat (these items will be discussed below).

<sup>110</sup> Although we transcribed many fragments of medical books, and so did Isaacs, not all the books used by members of the community survived, nor were all the revealed fragments transcribed. The numerical information given here is thus not final or definitive.

Table 9 The inventory of theoretical *materia medica* of the medieval Genizah people.

Origin	Number	%
Plant	310	74.8
Inorganic	69	16.7
Animal	35	8.5
<b>Total</b>	<b>414</b>	<b>100</b>

It appears very clear that the theoretical inventory of the Genizah people was much larger than the practical one. We find no evidence of the practical use of 136 medicinal substances mentioned in fragments of medical books in the Genizah (theoretical inventory) and identified.<sup>111</sup>

Some other theoretical inventories of *materia medica* that have been reconstructed, studied, and analysed on the basis of books written by classical as well as medieval medical authorities are set out in table 10 for the sake of comparison.

Table 10 Division by substance origin of historical theoretical medicinal inventories.

Origin	TG	%	ML	%	MG	%	AK	%	DI	%	HP	%
<b>Plant</b>	310	74.8	234	81.8	385	83.9	250	83.6	600	69.4	230	91.6
<b>Inorganic</b>	69	16.7	15	5.2	42	9.1	27	9	96	11.2	15	6
<b>Animal</b>	35	8.5	27	9.5	28	6.1	22	7.4	168	19.4	6	2.4
<b>Other</b>			10	3.5	4	0.9	–	–	–	–	–	–
<b>Total</b>	<b>414</b>	<b>100</b>	<b>286</b>	<b>100</b>	<b>459</b>	<b>100</b>	<b>299</b>	<b>100</b>	<b>864</b>	<b>100</b>	<b>251</b>	<b>100</b>

#### Sources for the historical theoretical inventories

TG – Theoretical Genizah (based on medical literature found in Cairo Genizah).<sup>112</sup>

ML – Medieval Levant [8–18th centuries AD] (based on both medieval medical literature and commercial sources).<sup>113</sup>

MG – Maimonides [12th cent. CE] (based on his translated book).<sup>114</sup>

AK – al-Kindi [10th cent. CE] (based on his translated book).<sup>115</sup>

DI – Dioscorides [1st cent. CE] (based on his translated book).<sup>116</sup>

HP – Hippocrates [4th cent. BC] (based on his book and Riddle's analysis).<sup>117</sup>

<sup>111</sup> The full list is presented in Part D, Appendix 2.

<sup>112</sup> Lev & Amar, Practical.

<sup>113</sup> Lev, Materials; Lev, Materia Medica.

<sup>114</sup> Maimonides, Glossaire.

<sup>115</sup> al-Kindi.

<sup>116</sup> Dioscorides.

<sup>117</sup> Riddle, Tradition.

From table 10 it is clear that theoretical inventories consisted of a fairly large number of substances, between 250 and 864. The theoretical inventory of the Genizah people, consisting of 414 substances, lies more or less in the middle.

C. *Inventories of practical as against theoretical  
materia medica (the gap)*

In the Introduction to this book (part A, chapter 2) we presented several questions and hypotheses that we kept in mind as we conducted our research. The first research question was, is there a gap between theoretical and practical medicinal substances, and the second was, what is the ratio of the two groups, and what is the size of the gap? The hypothesis was that the Cairo Genizah documents would help us detect such a gap and even measure it.

Sure enough, regarding the first question we can definitely answer that a gap of 136 substances separates the theoretical list (mentioned in books), consisting of 414 substances, from the practical one (mentioned in prescriptions, letters, and lists of *materia medica*), consisting of 278 substances.<sup>118</sup>

Table 11 The gap between the theoretical and practical *materia medica* inventories of the medieval Genizah people.

Origin	Difference in number of substances	%
Plant	87	64
Animal	38	27.9
Mineral	11	8.1
<b>Total</b>	<b>136</b>	<b>100</b>

This gap (table 11) is especially conspicuous considering that some of these substances are mentioned frequently in the medieval theoretical medical literature<sup>119</sup> on the one hand, and are used intensively in contemporary traditional medicine, on the other. These substances, such as Jew's stone, nightshade, lupine, and sweet lime, can be found in Middle

<sup>118</sup> See the complete detailed list of Practical M.M. in Part D, Appendix 1.

<sup>119</sup> For example Hamarneh, Texts.

Eastern and North African markets up to the present day. Lupine and sweet lime were grown and used as foods in Egypt itself. None of the above substances is mentioned in the Genizah commercial documents published so far.

Regarding the second question, determining the ratio between the two groups is not an easy matter. The numerical answer is that the gap is more than one third (33.8%) of the total number of *materia medica* mentioned in books, prescriptions, and *materia medica* lists. However, this picture is very complex and contingent on many factors that sustain each other in a delicate and most interesting web. These varied factors are the patients, their families, local healers, learned physicians, pharmacists, drug sellers, herbalists, market supervisors, traders, wholesalers, and professional medical literature. Remnants of such a web in the medical drug trade, on a smaller scale, could be observed and studied in the traditional medicine system that still exists in some Arab countries. We found out about this phenomenon when we studied the inventory of substances of traditional medicine in Israel.<sup>120</sup> It became clearer when we conducted another ethno-pharmacological survey, this time in the Kingdom of Jordan, and tried to draw a diagram to explain the geographical relations of dealers in Jordan, other Arab countries, and Israel.<sup>121</sup>

A written illustration of the power of one of the factors emerges from the citation from Maimonides' book (given in the Introduction). He fervently recommends to the Muslim ruler al-Afdal that he supply the court pharmacy with the best substances possible, thereby enlarging the practical inventory of *materia medica* of the medieval Egyptian court according to the medical literature (theoretical inventory).<sup>122</sup>

#### D. *Analysis and diagrammatic presentation of commerce in materia medica*

The theoretical medical knowledge derived from the medical books was undoubtedly the firmest foundation for eventual application by contemporary practitioners, but clearly they used only a fraction of it.

<sup>120</sup> Lev & Amar.

<sup>121</sup> Lev & Amar, Jordan.

<sup>122</sup> Maimonides, Poisons, p. 93; Maimonides, Regimen, p. 59.

Below we present some diagrams to open a window onto this complex world, to show its different inducing factors, their relationships, market forces, supply and demand, and more. The diagrams are based on years of learning, collecting, studying, and analysing original documents, and reading vast quantities of literature on various related subjects, with the goal of understanding the social and economic nexus for the production, trade, sale, and use of medicinal substances in the medieval Mediterranean region.

Diagrams A and C derive chiefly from the information we gathered and learned from historical studies on trade in the medieval Mediterranean published by scholars such as Ashtor,<sup>123</sup> Goitein,<sup>124</sup> Gil,<sup>125</sup> Y. Lev,<sup>126</sup> Ben-Sasson,<sup>127</sup> Dietrich,<sup>128</sup> Stillman,<sup>129</sup> Yacoby,<sup>130</sup> and E. Lev.<sup>131</sup> Another layer of data and experience emerged from studies of wild plants,<sup>132</sup> agriculture,<sup>133</sup> and medicinal substances<sup>134</sup> in the medieval Levant.<sup>135</sup> Yet more information was provided by ethno-pharmacological market surveys that have been conducted in the Middle East<sup>136</sup> in the 20th century, for example, in Egypt,<sup>137</sup> Syria,<sup>138</sup> Jordan,<sup>139</sup> Israel,<sup>140</sup> Iran,<sup>141</sup> and Iraq,<sup>142</sup> and also in Arab countries on the outer rim such as Yemen<sup>143</sup> and Morocco.<sup>144</sup>

Diagram B displays the factors, their relationships, and their effect on the theoretical and practical inventory of M.M. in the Jewish community

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<sup>123</sup> Ashtor; Ashtor, Europe; Ashtor, Levant; Ashtor, Spices; Ashtor, Sugar; Ashtor, Trade; Ashtor & Cervialli.

<sup>124</sup> Goitein, Society, Goitein, Jewry.

<sup>125</sup> Gil, Gil, Kingdom.

<sup>126</sup> Lev, Towns.

<sup>127</sup> Ben-Sasson.

<sup>128</sup> Dietrich, Egypt.

<sup>129</sup> Stillman.

<sup>130</sup> Yacoby, Trade; Yacoby, Commercial.

<sup>131</sup> Lev, Trade.

<sup>132</sup> Amar, Medieval.

<sup>133</sup> Amar, Agricultural.

<sup>134</sup> Lev, Materials.

<sup>135</sup> Lev, Materia Medica.

<sup>136</sup> Ahmed et al.

<sup>137</sup> Ducros; Meyerhof, Bazar.

<sup>138</sup> Honda et al.

<sup>139</sup> Lev & Amar, Jordan.

<sup>140</sup> Lev & Amar; Lev & Amar, Ethnic.

<sup>141</sup> Hooper; Ahmed et al.; al-Rawi & Chaakravarty.

<sup>142</sup> Hooper; al-Rawi & Chaakravarty.

<sup>143</sup> Honda et al.

<sup>144</sup> Ahmed et al.

of Cairo as an example of medieval society. Actual demand is depicted in the centre. For this diagram we used information drawn from original documents such as letters, prescriptions, and *materia medica* lists that have been studied and in a few cases published by different scholars such as Isaacs,<sup>145</sup> Goitein,<sup>146</sup> and ourselves, and from sources set out above in the explanation for diagram A.

The relation of demand and supply can be learned from diagram C. Documents used here are merchants' letters: merchants are asked to buy a certain medicinal substance at a patient's request (asphalt);<sup>147</sup> or the market demand or profitability of a certain item (saffron) is shown.<sup>148</sup>

The relations of physicians, patients, and pharmacists (regarding *materia medica*) are reflected in the prescriptions, and the lists of *materia medica* portray the stocks of pharmacies, drug sellers' shops in the markets, and their actual demand from wholesalers. A few letters dealing with medical problems and their treatment supply us with important information as well.

The *hisba* literature tells much about the medieval market control system, which was greatly concerned with the sale of medicinal substances.<sup>149</sup> Various practical issues, such as counterfeit substances, are discussed there, as well as the work of the *muhtasib* (censor). This writing truly reflects the reality of the age.<sup>150</sup>

The professional medical and pharmaceutical literature itself was an important factor in shaping the practical *materia medica* inventory since it nourished and directly or indirectly influenced the demand for *materia medica*, which powered the entire system. Laymen, families, and especially physicians and pharmacists used such literature; patients could read and try to concoct a recipe at home with substances bought at the market or in a pharmacy. More probably, physicians would prescribe according to formulae they learnt from medical books in their own libraries; the pharmacists too would pore over the professional literature they possessed to maintain a fresh supply and reliable inventory. Some evidence even exists on the use of medieval literature by drug sellers in

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<sup>145</sup> Isaacs, Medieval.

<sup>146</sup> Goitein, Letter; Goitein, Medical; Goitein, Society.

<sup>147</sup> Asphalt from Alexandria to Jerusalem—TS 12.364; TS 13J26.

<sup>148</sup> Gil Kingdom, IV, pp. 628–629, no. 813.

<sup>149</sup> al-Kurashi.

<sup>150</sup> Levi-Provencal.

Diagram A The Sources for the Theoretical and Practical *materia medica* of the Medieval Mediterranean Society

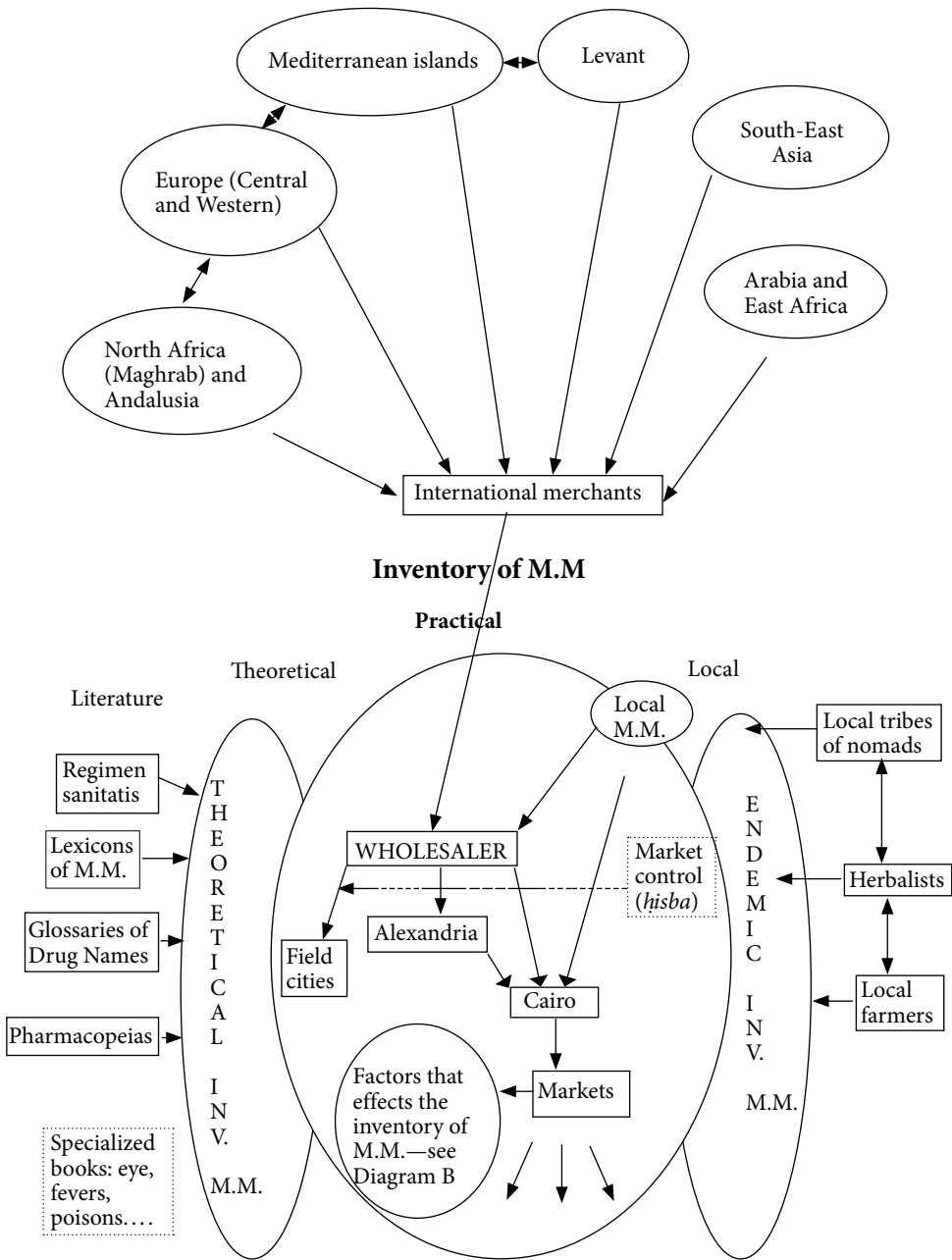
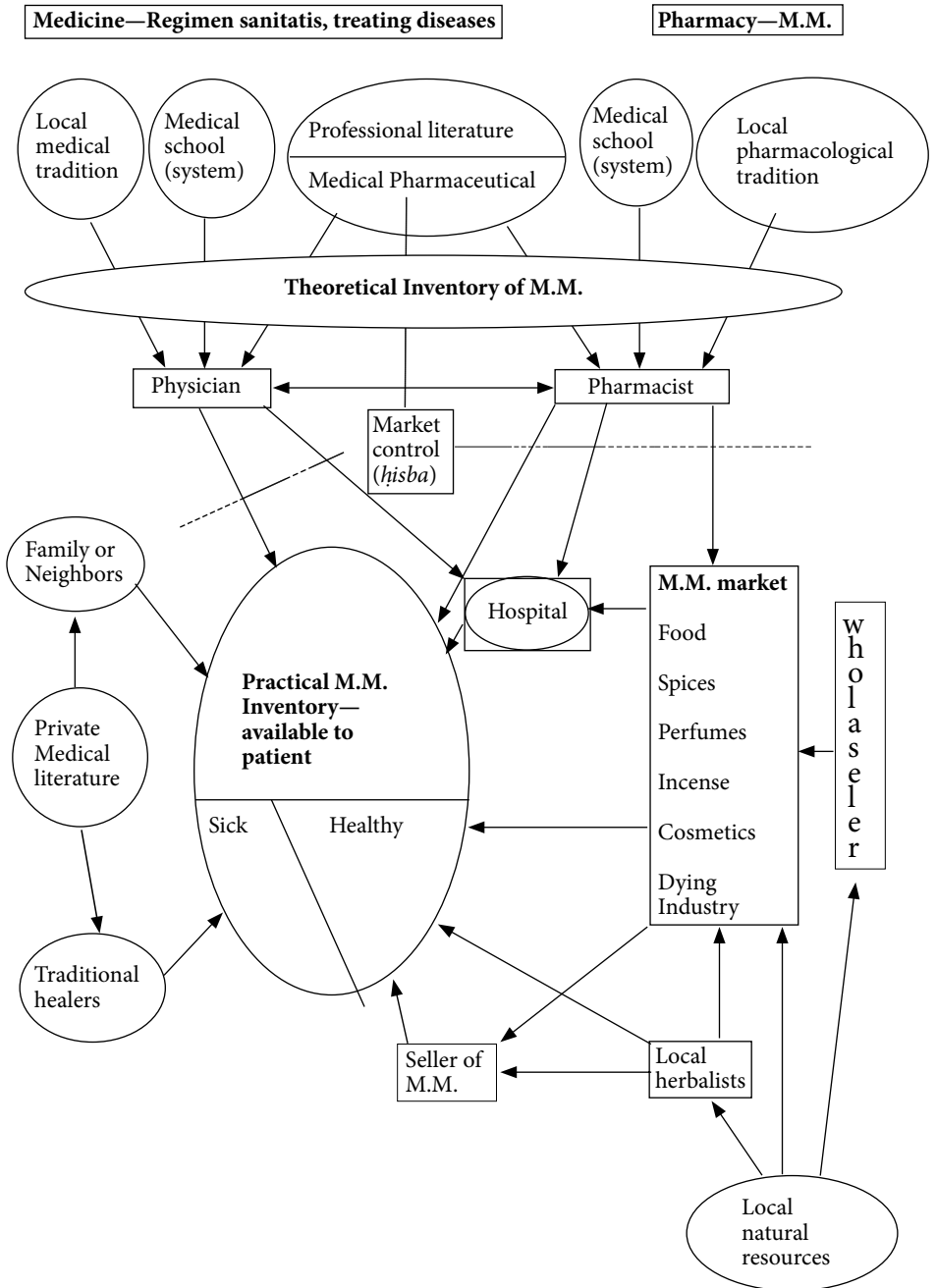




Diagram B Influential Factors on the Inventory of the Practical Medieval *materia medica* of the Mediterranean Society



markets in various Middle Eastern countries in the 20th century<sup>151</sup> and today.<sup>152</sup> The chief works are the books by **al-ʿAntakī** (d. 1599, therefore too late for our specific research)<sup>153</sup> and by **al-Kūhīn al-ʿAtṭār**,<sup>154</sup> who was a member of the Jewish community of medieval Cairo. This book was very popular among medical practitioners and drug sellers of medieval Cairo as well.<sup>155</sup> Analysis of some of the innumerable fragments of medical books in the Genizah collection revealed that among the most frequent used books, after works on ophthalmology, the books of **al-Kūhīn al-ʿAtṭār**<sup>156</sup> and **Ibn Abī al-Bayān** were the most popular.<sup>157</sup>

### *First-Aid Kits for the Home*

Another aspect of the practical use of M.M. as part of the daily life cycle of medieval people—the family or society as a whole—is the existence of “first-aid kits for the home”. Such kits are described by a few late medieval historical sources, but we presume that they genuinely reflect the earlier medieval world too.<sup>158</sup> We would expect that each family owned such a kit, which was maintained by the most trained and knowledgeable member of the family.

### *Two detailed illustrations of the commercial aspects of medicinal substances*

In our research, and in this book, we have focused mainly on the practical medieval medical uses of substances referred to in the Genizah, and less on the commercial aspects. These emerge from Jewish merchants’ letters, which have been published by other scholars.<sup>159</sup>

We demonstrate this aspect with two widespread substances that, we venture to suggest, truly represent the general picture obtained from

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<sup>151</sup> Meyerhof, Bazar.

<sup>152</sup> Lev & Amar, Ethnic.

<sup>153</sup> al-Antaki.

<sup>154</sup> Kohen, al-Attar.

<sup>155</sup> Chipman & Lev, Syrup.

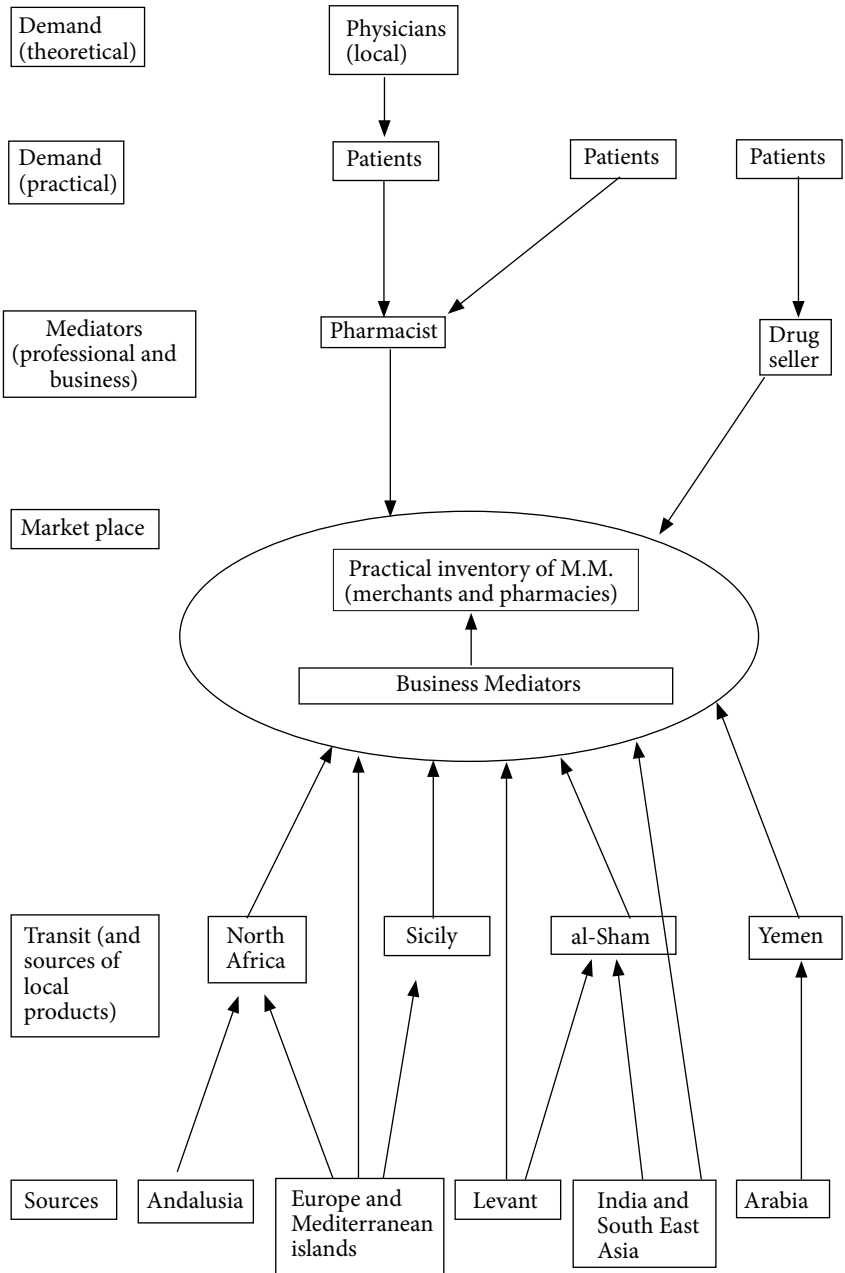
<sup>156</sup> Kohen, al-Attar.

<sup>157</sup> Ibn al-Bayan.

<sup>158</sup> Shfer.

<sup>159</sup> Gil; Gil Kingdom; Goitein, Society, Gil, Jewish; Ben-Sasson.

Diagram C The relation between demand and supply



historical sources on the economics of, and trade in, medicinal substances of the Genizah people in the 11th–13th centuries. The first substance is saffron, which was well known and widely used in the Mediterranean from ancient times. The second is actually a group of fruits of the genus *Terminalia*, of south-east Asian origin, which penetrated the Mediterranean medical tradition through trade routes opened in consequence of the Muslim conquests. According to our research, myrobalan became the most frequently used drug in medieval Cairo, a leading world city at that time. The wide range and abundance of sources mentioning both these substances in the Genizah also yielded us information on their commercial aspects, in contrast to many other substances, such as their sources, trade routes, shipping methods, prices, selling conditions, and so on. Although this kind of information is rare, and reflects only a fraction of the general picture, it undoubtedly sheds light on it and fills it out.

#### A. Saffron (*Crocus sativus*)<sup>160</sup>

Saffron, known as one of the most important spices in the medieval world, is mentioned in many Genizah documents as a plant with a wide variety of uses: medicine, spice, perfume, and mainly for dyeing.<sup>161</sup> According to the medieval sources it was cultivated in various locations such as Afghanistan, Isfahan and elsewhere in Iran,<sup>162</sup> Jadia in al-Shām,<sup>163</sup> Spain,<sup>164</sup> etc. We learned from several Genizah fragments that it was also cultivated in Karmisin (Kermanshāh, east of Baghdad),<sup>165</sup> Tunisia,<sup>166</sup> and probably also in Sicily.<sup>167</sup>

Saffron was brought from the countryside to a city centre, thence along the trade routes to other commercial centres of the medieval world. For example, in North Africa (the Maghrib) commerce was concentrated in

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<sup>160</sup> See in detail Part C, Chapter 6.

<sup>161</sup> Goitein, Society, IV, pp. 174–175.

<sup>162</sup> al-Jahiz, p. 31; al-Idrisi, pp. 195, 675, 677.

<sup>163</sup> Yaqut, II, p. 5.

<sup>164</sup> al-Idrisi, pp. 553, 569.

<sup>165</sup> Gil, Kingdom, II, p. 42, no. 12.

<sup>166</sup> Goitein, Society, IV, p. 173.

<sup>167</sup> Gil, Kingdom, III, p. 446, no. 749.

the city of Qayrawān.<sup>168</sup> The commodity was then carried to Mahdiyya, and from its port shipped to the Egyptian ports of Alexandria, Rashīd (Rosetta), and Dimyāt (Damietta), and from there to Fustat.<sup>169</sup>

One merchant in Fustat wrote a letter to his partner in the Maghrib stating that saffron was in great demand. He asked him to send “as much as you can buy and as much as you can find in the markets...and send it overland or by sea.”<sup>170</sup> A parallel trade route was from Sicily, through Alexandria, to Fustat;<sup>171</sup> and subsequently Tunisia-Sicily-Alexandria-Fustat. At that time saffron was sent to Europe from Spain and Byzantium.<sup>172</sup> Later it was exported to the east from Italy, mainly the region of the village of San-Gimignano.<sup>173</sup> In sum, although saffron was cultivated in several locations in the east it was on a small scale that did not supply the high demand; the greater part of the product was apparently imported from Europe.

Saffron was dispatched in boxes or special packages.<sup>174</sup> It was considered one of the most expensive substances; for the production of one gram, 150 dried stigmas had to be collected. Flower gathering and the process of separating the stigmas were manual and required many skilled workers. The high price was an incentive for many attempts at faking the product (see figure 46).

Prices of saffron are mentioned in a few Genizah documents. It was apparently a fixed price in most cases, with small fluctuations caused by international events, the season, product quality, and supply and demand. The difference between purchase and sale prices was about 50%; this was not pure profit but also covered various expenditures such as obtaining selling permits in the ports, bribes, and the like.<sup>175</sup>

The average price of a gram of saffron was 3.5 dirham.<sup>176</sup> Wholesalers usually (between 1050 and 1080) used a weight unit called a “mann” (of

<sup>168</sup> Gil, Kingdom, II, p. 302, no. 110.

<sup>169</sup> Gil, Kingdom, II, p. 521, no. 181; III, p. 172, no. 355; p. 940, no. 581; IV, p. 412, no. 739; Ben-Sasson, p. 197, no. 49.

<sup>170</sup> Gil, Kingdom, IV, pp. 628–629, no. 813.

<sup>171</sup> Gil, Kingdom, III, p. 901, no. 574; p. 912, no. 575; Ben-Sasson, p. 499, no. 102; and more.

<sup>172</sup> Ben-Sasson, p. 128, no. 24; Stillman, pp. 72–73.

<sup>173</sup> Amar, Production, p. 201; Heyd, II, pp. 668–669.

<sup>174</sup> Gil, Kingdom, III, p. 940, no. 581; IV, pp. 600–601, no. 800; and more.

<sup>175</sup> Gil, Kingdom, III, p. 172, no. 355.

<sup>176</sup> Gil, Kingdom, II, p. 990, no. 600.

different weight in different geographical zones; 1 kilogram on average); they generally paid 2–2.3 dinars for one “mann” of saffron,<sup>177</sup> which they sold for 5–7 dinars.<sup>178</sup>

In periods of military tension, such as that between the Muslims and the Normans in Sicily in 1062, saffron prices fell drastically: “saffron [has fallen] from 4 to 2 dinars for a ‘mann’ and even less... the city is paralyzed, with no commerce or trade whatsoever.”<sup>179</sup> Buying saffron privately for home use was much more expensive, for example, 9.5 dirham for one ūqiyya (ounce) [30 grams for 1/3 dirham].<sup>180</sup> In fact, this was the quantity needed, and the price that had to be paid, in private consumption for medicine and spicing food. For example, to make aromatic wine, different spices, including half a dirham’s worth of saffron, were used.<sup>181</sup> A document of Nathan Ben Solomon Ha-Kohen refers to saffron for medication, noting its price: 1/4 dirham.<sup>182</sup>

#### B. *Myrobalan or Cherry Plum (Terminalia sp.)*

Contrary to saffron, which was traded mainly in its region of origin, the Mediterranean, most myrobalan species (*halīlaj* in Arabic), were imported from tropical Asia and Africa where they were cultivated (India, Burma, Madagascar) to the Mediterranean region (east) and from there exported to Europe (west).<sup>183</sup> The Kabūlī species was exported from Kabul in Afghanistan.<sup>184</sup> In the medieval medical literature several species are mentioned: Yellow myrobalan (*Terminalia citrina*) unripe fruits [*halīlaj* (*ihlīlaj*) *aṣfar*]; black myrobalan (*Terminalia citrina*) ripe fruits [*halīlaj* (*ihlīlaj*) *aswad*]; Indian myrobalan (*Terminalia arjuana*) [*halīlaj hindī*]; belleric myrobalan (*Terminalia bellerica*) [*balīlaj*]; emblic myrobalan (*Terminalia emblica*) [*ʾamlaj*]; chebulic myrobalan (*Terminalia chebula*) [*halīlaj* (*ihlīlaj*) *Kabūlī*].<sup>185</sup>

<sup>177</sup> Ben-Sasson, pp. 264, 272, nos. 63, 64.

<sup>178</sup> Gil, Kingdom, IV, p. 272, no. 686, p. 412, no. 739, p. 446, no. 749, p. 531, no. 773; Ben-Sasson, p. 421, no. 88.

<sup>179</sup> Gil, Kingdom, III, p. 446.

<sup>180</sup> Goitein, Society, II, p. 269.

<sup>181</sup> Goitein, Society, IV, p. 260.

<sup>182</sup> Goitein, Society, IV, pp. 232–233.

<sup>183</sup> Farag.

<sup>184</sup> al-Idrisi, p. 195.

<sup>185</sup> See in details Part C, Chapter 6.

Beside their medicinal properties and uses (see figure 12),<sup>186</sup> the fruits were also used for ink production, dyeing, and tanning.<sup>187</sup> We recorded different kinds of myrobalan in 24 *materia medica* lists and 55 prescriptions; they are also referred to in trading documents found in the Genizah<sup>188</sup> dealing with dried fruits of myrobalan trees. In other cases a jam made from the ripe fruits (*murabbayāt halīlaj*)<sup>189</sup> and also used for medicine, mainly to treat and clean a weak stomach, is mentioned.<sup>190</sup>

Myrobalan was imported to Egypt through the trading routes of the Indian Ocean. From Aden (Yemen) it was transported to Egypt through the port of Ghadhab.<sup>191</sup> Many Genizah fragments such as letters between merchants based in Fustat and Alexandria, deal with the trade in myrobalan.<sup>192</sup> From Egypt, cargoes of Indian and yellow myrobalan were exported to Qayrawān<sup>193</sup> and Sicily<sup>194</sup> through Mahdiyya.<sup>195</sup> Cargoes were also sent from Egypt to the Levant: to the ports of Ascalon,<sup>196</sup> Tyre,<sup>197</sup> and Tripoli,<sup>198</sup> and thence overland to the interior. According to the Genizah documents, myrobalan of Egyptian origin was sold in Jerusalem although the precise route is not clear. In a letter sent from Ramlah to Jerusalem, on which the signature of ‘Amram ha-Rofe was identified, the addressee was asked to send some medicinal substances including kohl and myrobalan.<sup>199</sup> In another letter, sent from Jerusalem to Fustat in 1053, Nahray Ben Nissim is asked to send myrobalan for the treatment of the sender’s wife.<sup>200</sup>

Sometimes the order to sell was sent from Fustat through Alexandria to a merchant in the west. In a few cases the sellers had no notion of the final destination, where the cargo was to be sold. This was because of the long distances and because the final destination was determined by

<sup>186</sup> Ibn al-Baytar, al-Jami, IV, pp. 196–198.

<sup>187</sup> Goitein, Society, I, p. 337.

<sup>188</sup> Goitein, Society, III, p. 903, no. 574; p. 912, no. 474; Ben-Sasson, p. 266, no. 63, p. 273, no. 64.

<sup>189</sup> Gil, Kingdom, III, p. 276, no. 378, IV, p. 589, no. 794.

<sup>190</sup> Ibn al-Baytar, al-Jami, IV, p. 197.

<sup>191</sup> Goitein, Yemenites, p. 110.

<sup>192</sup> Gil, Kingdom, III, p. 16, no. 308.

<sup>193</sup> Gil, Kingdom, III, p. 170, no. 354, p. IV, 101, no. 632.

<sup>194</sup> Gil, Kingdom, II, p. 465, no. 158; Ben-Sasson, p. 626, no. 125.

<sup>195</sup> Gil, Kingdom, III, p. 276, no. 378.

<sup>196</sup> Gil, III, pp. 187–188, no. 487.

<sup>197</sup> Gil, III, p. 210, no. 494.

<sup>198</sup> Gil, III, p. 217, no. 496.

<sup>199</sup> Gil, II, p. 421, no. 230.

<sup>200</sup> Gil, III, p. 106, no. 460, p. 108, no. 461.

the market forces. One instance is indicated from a letter sent by Nahray ben Nissim to a merchant: “and the shipment of which the myrobalan is in partnership, of this year, please let me know where you sent it to”<sup>201</sup>

Prices can be ascertained from other documents: Yellow was the best kind and therefore the most expensive, Indian kind was the second best, and chebolic was the cheapest.<sup>202</sup> As with other substances, the price of the kinds of myrobalan varied according to the market conditions. For example, a merchant from Alexandria writes in a letter (summer 1062): “Chebolic myrobalan, has no demand...”<sup>203</sup> A year later (Mahdiyya, 1063), the market was rising and the price of chebolic myrobalan was 2.5 dinar per “mann” and yellow was ten dirhams per *qinṭar*; in both cases only small quantities were sold.<sup>204</sup> In Alexandria (1065) the price of yellow was already 5–6 dinars, and concentrate of fine chebolic myrobalan was one dirham per “mann”.<sup>205</sup> In any event, there is no doubt that the differential between purchase and sale prices was high; moreover, in Fustat ten “mann”s were sold to a middleman in Sicily (1059) for 3.3 dinars, but a *qinṭar* of yellow myrobalan sold for 1.25 dinars.<sup>206</sup>

### Conclusions

According to merchants’ letters and other documents, medicinal substances played a major part in all chains of commerce, at stations along trade routes, and in local and international trade. In other words, some of the medicinal substances were supremely important commodities in the internal and international commerce of the Jewish community of Cairo as well as in other cities of Egypt, in the Mediterranean region and throughout the Muslim empire.

Jewish traders had an advantage over Muslims and Christians owing to the widespread Jewish Diaspora throughout the ancient world, especially in the port cities in countries with developed commercial activity. Family members of some physicians and pharmacologists were engaged in such enterprises as well.

<sup>201</sup> Gil, Kingdom, II, p. 709, no. 241.

<sup>202</sup> Gil, Kingdom, III, p. 905, no. 574, p. 912, no. 474; Ben-Sasson, p. 226, no. 63, p. 273, no. 64.

<sup>203</sup> Gil, Kingdom, IV, p. 447, no. 749.

<sup>204</sup> Gil, Kingdom, III, p. 252, no. 373; Ben-Sasson, p. 401, no. 86.

<sup>205</sup> Gil, Kingdom, IV, pp. 586, 589, no. 749; Goitein, Yemenites, p. 110.

<sup>206</sup> Ben-Sasson, p. 159, nos. 39, p. 163, no. 38.



Certain substances were exported from Egypt to South-East Asia, North Africa, Sicily, Europe, and the Levant. Examples are alum, aniseed, cinnamon, clove, flax, henna, indigo, meadow saffron, Mumie, pepper, purging cassia, safflower, sal ammoniac, salep, and sugar.

Medical history in general and practical medical documents in particular are an integrated components in the study of past civilizations. The data collected here is informative regarding the medieval trade routes, the mercantile and industrial echelons, and supply and demand in the market.

PART C

DESCRIPTIONS AND USES OF THE PRACTICAL  
*MATERIA MEDICA*



## CHAPTER SIX

### MATERIA MEDICA: DETAILED ITEMS

#### *Formula for the entries of medicinal substances*

The standard order of the concise entries is:

**English name**

Synonymous, scientific name (botanical family), **A:** Arabic name.

**D&H:** Description and history.

**PU:** Practical uses (taken from original lists of *materia medica* written by pharmacists, and prescriptions written by physicians, in Arabic, Judaeo-Arabic, and Hebrew).

**TU:** Theoretical uses, taken from medicine and pharmacy books and notebooks found in the Genizah. These were the professional literature that the physicians as well as the pharmacists used (based mainly on Isaacs' catalogue, unpublished cards and new documents).

**OMU:** other medieval medicinal uses

**TM:** traditional uses recorded among the inhabitants of different geographic areas and various ethnic groups in the Middle East.

**TAI:** trade, agriculture, and industry

#### **Agaric**

*Agaricus sp.* (Agaricaceae) or *Polyporus officinalis* (Polyporaceae), **A:** 'aghārīqūn, ghārīqūn<sup>1</sup>

**D&H:** Mushroom belonging to the basic fungi species with cap and stem (sometimes double-stemmed). The sides of its overlapping cap are free and unattached to the stem. Its spores are smooth and brown in colour. The main types of agaric grown in the Levant are **common agaric** (*Agaricus campester*), a widespread, edible, and commercially cultivated type; **field agaric** (*Agaricus arvensis*), commonly found, large, and edible; and **cultivated agaric** (*Agaricus bisporus*), which is agriculturally

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<sup>1</sup> Issa, p. 146, no. 14.

grown.<sup>2</sup> Dioscorides used agaric for the treatment of liver and spleen, to cure asthma, dysentery, and epilepsy, and as an antidote to poisons.<sup>3</sup>

**PU:** The plant figures in 3 lists of *materia medica* (T-S Ar.43.315; T-S NS 164.12; T-S Ar.43.317) and 12 prescriptions: for unknown uses (T-S NS 83.28; T-S Or.1081.J.39; T-S NS 306.41; T-S K25.212; T-S Ar.34.305); for headache (migraine) and weak eyesight, as written by Maimonides in a letter to a student (T-S Ar.30.286); in an invalid's diet (T-S Ar.42.189); as an aphrodisiac (T-S NS 164.159); as a purgative, 'iyāraj (T-S Ar.41.72); and in a compound medicine called the lesser 'iṭrīful (T-S Ar.42.67).

**TU:** Agaric is mentioned in medical books (T-S Ar.40.111; T-S Ar.11.31; T-S Ar.45.33; T-S NS 90.71; T-S Or.1080.1.72), some dealing with eye diseases (T-S Ar.43.166), heart diseases (T-S Ar.41.47), poisoning (T-S Ar.41.116), *materia medica* and pharmacopoeias (T-S Ar.40.91; T-S Ar.41.13; T-S Ar.43.320), and in other fragments (T-S NS 297.11; T-S NS 297.115).<sup>4</sup>

**OMU:** al-Kindī used the 'ghārīqūn' in a medication for treating malaria, for problems of the intestines and liver, and for jaundice. He also used it to prepare a special liquid for transfusions.<sup>5</sup> According to Maimonides, 'agariko' was reliable for its cleansing qualities and was mostly used as a drug known for its effective results in treatment. It was also an expectorant and a component of the greater theriac. Agaric is listed among the hot and dry drugs.<sup>6</sup> Ibn al-Bayṭār states that 'ghārīqūn' was good for the nerves and was taken as a diuretic. He also quotes Ibn Sīnā, who recommends it for epilepsy and malaria.<sup>7</sup> Saladino d'Ascoli defines agaric as a useful medicine. He says that the plant grew near trees, and that it was a medicine for all kinds of internal obstructions.<sup>8</sup>

**TM:** Various types of agaric are edible and are generally called 'champignons' (mushrooms).<sup>9</sup> Dried mushrooms are used in Iran for the internal treatment of worms. In India, the mushroom is used as a

<sup>2</sup> Description in: Plants & Animals, IX, p. 141; XII, p. 84; Zohary, p. 115.

<sup>3</sup> Dioscorides, III.1.

<sup>4</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>5</sup> al-Kindī, nos. 113, 211, 214. Cf. al-Biruni, I, p. 244.

<sup>6</sup> Maimonides, Regimen, 2:11; Maimonides, Aphorisms, 13:13; 21:33; 69; Maimonides, Poisons, p. 112.

<sup>7</sup> Ibn al-Bayṭār, al Jami, III, pp. 146–148; Leclerc, no. 1622. Cf. al-Antaki, p. 243.

<sup>8</sup> Saladino, p. 85.

<sup>9</sup> Uphof, pp. 16, 432; Hill, p. 292; Plants & Animals, XII, p. 84.

congealing agent to staunch blood, and in Egypt it was used in the past to draw blood and in bandaging wounds.<sup>10</sup>

## Almond

*Amygdalus communis* = *Prunus amygdalus* (Rosaceae), **A: lawz**<sup>11</sup>

**D&H:** The almond tree grows wild and relatively tall (up to 8 meters) with long, tapering leaves. Its white and pink blossoms appear in the spring before the leaves bud, and its nuts are large and sweet. Two main species are known: the sweet almond (*Amygdalus communis* var. *dulcis*) used for food and industry, and the bitter almond (*Amygdalus communis* var. *amara*) containing amygdalin.<sup>12</sup> The almond tree has grown in Israel since early times. It is mentioned in the Bible several times, for example, when the sons of Jacob took ‘the choice fruits of the land’ down to Egypt (Gen. 43:11), or when Aaron’s rod blossomed and produced almonds (Num. 17:23) as a sign from God. It is also often mentioned in the Mishna and Talmud.<sup>13</sup> Dioscorides notes the *amygdale* and indicated its medicinal uses as an emmenagogue, to relieve headaches, cure intestinal wounds, cough, inflammation and sunburn, and skin diseases, to soften the stomach, and eliminate stones. The gum of the tree and the oil derived from the nuts are also used for these purposes.<sup>14</sup>

**PU:** Different kinds of almond figure in 14 lists of *materia medica* (oil, T-S NS 264.80; sweet, T-S Ar.35.366; bitter, T-S Ar.35.366; seeds, T-S Ar.43.317; T-S NS 306.117; T-S Ar.35.229; T-S Ar.35.229; T-S Ar.35.327; T-S Ar.39.139; T-S AS 184.234; T-S NS 224.62; T-S NS 264.80; T-S NS 306.106; T-S NS 306.117; T-S Or.1080.1.87); and in 27 prescriptions: for unknown uses: (T-S 13J6.14; oil: T-S Ar.40.141; T-S AS 182.179; T-S 12.33; bitter, T-S AS 181.127; seeds, T-S Ar.39.184; T-S Ar.46.07; T-S Ar.29.137; T-S AS 179.259; T-S NS 97.55; T-S NS 306.134: sweet, T-S Ar.41.110; T-S Ar.41.110; bitter T-S Ar.30.305; T-S Ar.42.110), weak eyesight and migraine (Maimonides:—oil, T-S Ar.30.286), eye treatment (sweet oil, T-S AS 159.241), diet (oil, T-S Ar.41.71), cream (oil, T-S Ar.41.72), aphrodisiac (oil, T-S NS 164.159), laxative (sweet oil,

<sup>10</sup> Hooper, p. 81; al-Kindi, p. 209; Ducros, pp. 156–157.

<sup>11</sup> Dinsmore & Dalman, no. 658; Issa, p. 148, no. 15.

<sup>12</sup> Plants & Animals, X, p. 137; XII, pp. 139–140; Hill, pp. 356–357.

<sup>13</sup> Feliks, World, pp. 56–59; Goor, Fruits, pp. 288–290.

<sup>14</sup> Dioscorides, I.176.

T-S Ar.42.67), face and eye treatment (sweet seeds, T-S Ar.35.36), fever (T-S AS 155.277), dressing bites (T-S NS 164.98) and cough (resin, T-S 8J15.20). It also appears in an alchemical astrological prescription (T-S 8J14.3). Almonds and seedless raisins are recommended by Maimonides as good food for one of his student; this combination endured in Jewish folklore as ideal food (T-S 16.200).<sup>15</sup>

**TU:** Almond was an important foodstuff as well as a medicinal simple; it is mentioned in medical books as a basic simple in a (40-day) dietary regimen to increase weight (T-S Ar.40.194); it features in recipes taken from Ibn Sīnā's *al-Qānūn* [ed. Bulaq, III:302–3] (T-S Ar.41.96) and in a preparation of 'rub' (jam) and an electuary (T-S NS 34.16). It is also present in a *materia medica* book (T-S NS 164.98v) and in a recipe (potion) for unknown uses (T-S NS 222.34), and in one case roasted (T-S Ar.42.110r). Almond oil is mentioned in a tabulated work on medicine which includes general management of fevers, hectic and septic fevers, cancer, erysipelas, soft and hard inflammatory swellings, and elephantiasis (T-S Ar.41.137), and as an immersion in the bath-tub for the management of fever (with goat's milk and as substitute for violet oil; T-S NS 224.186) and in books of *materia medica* (T-S Ar.40.60; T-S Ar.40.162). Bitter almonds were used to treat stones in the bladder, symptoms of urine retention with severe pain (T-S K14.18), and as a stomachic (in small doses—overdose can prove fatal) for liver complaints, splenic obstruction, ear drops (T-S Ar.39.253); and for the treatment of wind, warts, dysuria, dysmenorrhoea, and hard swelling; and as an abortifacient when the foetus is dead (T-S Ar.42.151).<sup>16</sup>

**OMU:** The physician Assaf (Assaf ha-Rofe) writes that almond oil fortifies the heart, relieves stress, and heals the intestines. The oil of bitter almonds was beneficial in treating headaches, general pains, cough, breathing problems, lungs, kidney stones, liver ailments, renal obstructions, impotence, and menstruation.<sup>17</sup> In his book of religious law written in 1006 CE, Levi Ben Yefet the Karaite, who was active in the Land of Israel, allows the eating of 'roasted almonds' on the Sabbath as a medication against diarrhoea.<sup>18</sup> Maimonides reports on the use of almonds in the context of the diet recommended to the Sultan. Elsewhere almonds and almond oil are mentioned as an emetic and a component in a medi-

<sup>15</sup> Goitein, Society, IV, pp. 246, 247.

<sup>16</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>17</sup> Assaph, IV, p. 399.

<sup>18</sup> Levi Ben Yefet, p. 47a.

cine to purify the blood and to fortify the spirit, as well as being an ingredient of a medicine called the 'greater *'atrīfal*' which strengthened the organs and delayed old age. Almond was also used for dressing bites by stray dogs.<sup>19</sup> al-Birūnī and Ibn al-Bayṭār in their 'Lawz' entries describe the almond and list similar medicinal uses.<sup>20</sup> Sweet almond oil—'duhn al-lawz al-ḥulwa'—is also mentioned as a cold and moist drug used as a remedy.<sup>21</sup> In the entry 'samgh al-lūz' (almond tree gum), Ibn al-Bayṭār claims that this was a medicinal substance which Dioscorides had used as a bitter, astringent drug. Its typical virtues are in pain relief, blood purification, curing of skin diseases, chronic cough, and dissolving kidney stones.<sup>22</sup>

**TM:** Almond nut is used as food and in the production of confectionary.<sup>23</sup> Arabs in Israel used almond juice to remove birthmarks.<sup>24</sup> Yemenite Jews used almonds externally to treat haemorrhages, and internally to treat kidney stones, spleen, sore throat, and cough.<sup>25</sup> Traditional medicine among the Jews of Iraq makes extensive use of the almond tree and its products to treat eye diseases, dysentery, and earache; to relieve birth pangs and to increase mother's milk.<sup>26</sup> In Iran and Iraq the bitter almond species is grown, and the ointment made of the nuts is used to treat carbuncles.<sup>27</sup>

Even in Europe, traditional medicine uses the almond tree and its products.<sup>28</sup> Almond oil, for example, is used as a softening drug, for pain relief, and for alleviating cough.<sup>29</sup>

**TAI:** There is considerable evidence from medieval times of the cultivation of almonds in various parts of this region, including Ashkelon, Transjordan, Jaffa, Safed, Acre, Jerusalem, Shechem, and Baalbek.<sup>30</sup> A pharmacist whose name is not clear, but who is referred to as

<sup>19</sup> Maimonides, *Answers*, 4:20; Maimonides, *Aphorisms*, 13:44, 51; 20:77; 21:72; Maimonides, *Regimen*, 3:4, 9, 11; Maimonides, *Poisons*, p. 130. Cf. Ibn Sina, p. 354.

<sup>20</sup> al-Biruni, I, p. 294; Ibn al-Baytar, *al-Jami*, IV, pp. 111–112; Leclerc, no. 2040. Cf. al-Antaki, p. 284.

<sup>21</sup> Ibn al-Baytar, *al-Jami*, II, 111–112; Leclerc, no. 927.

<sup>22</sup> Ibn al-Baytar, *al-Jami*, III, p. 86; Leclerc, no. 1412.

<sup>23</sup> *Plants & Animals*, XII, p. 140; Uphof, p. 33.

<sup>24</sup> Krispil, p. 1577.

<sup>25</sup> Reiani, p. 43, no. 98.

<sup>26</sup> References in: Ben-Yakov, p. 761. Cf. Krispil, p. 1577.

<sup>27</sup> Hooper, p. 157.

<sup>28</sup> Grieve, pp. 21–26.

<sup>29</sup> Uphof, p. 33.

<sup>30</sup> Goor, *Fruits*, pp. 293–295.



al-Dimashqī ('the Damascene'), notes two kinds of almond, 'lawz al-murr' (bitter almond) and 'lawz al-ḥulwa' (sweet almond), in a list of 90 medicinal and useful plants that grow on Mount Lebanon and that can be profitably gathered as a means of livelihood.<sup>31</sup> Almond and shelled almond were an important commodity since they were consumed as food and used for medicinal purposes; almond was imported along with various nuts into Egypt from east and west.<sup>32</sup> Many traders' letters and documents, mainly from the 11th century, describe the commerce in the seeds between the cities and ports of Cairo, Jerusalem, Alexandria, Sicily, Palermo, and Mazara.<sup>33</sup> In a letter dated 1065 from the Cairo Genizah sent by Abūn Ben Ṣedaqa of Jerusalem to Nahray Ben Nissim of Fustat, there is mention of 'ṣamgh lawz'—merchandise bought for export.<sup>34</sup> In another letter, dated 1196 in Jerusalem, Abu Zikrī, a physician of the Ayyubid sultan, mentions a medication made of sugar and almonds, which was used as a remedy.<sup>35</sup> Makers of almond sweetmeats were a separate craft, and usually concentrated in a single locality in Fustat and elsewhere.<sup>36</sup>

## Aloe

*Aloe sp.* (Aloaceae), **A: ṣabir suqūtrī, ṣabir maqaṣīrī, ṣabira**<sup>37</sup>

**D&H:** There are 250 species of aloe; most of them grow in tropical southern Africa. Aloe is a perennial bush with large, succulent, rosette leaves (90–190 cm) with spiny edges and sharply pointed at the tips. The flowering stem is high and the colour of the flower is yellow. Domesticated plants grow near ancient villages and in gardens. Dry decoction of the succulent leaves of different species is the basis for the production of a black and shiny substance, its colour and quality depending upon the level of its refining.<sup>38</sup> The medicinal applications of the plant were known in ancient Babylon where it was used as a diuretic and a remedy for stomach disorders.<sup>39</sup> Dioscorides described the use of the aloe

<sup>31</sup> al-Dimashqī, p. 200.

<sup>32</sup> Goitein, Society, I, 121, 210. IV, 246.

<sup>33</sup> Gil, Gil, Kingdom, see indices.

<sup>34</sup> Gil, III, p. 245, no. 501.

<sup>35</sup> Goitein, Jewry, p. 324.

<sup>36</sup> Goitein, Society, I, 83, 190, 195, IV, 246.

<sup>37</sup> Maimonides, Glossaire, p. 90, no. 318; Malki, p. 66.

<sup>38</sup> Zohary, p. 602; Plants & Animals, XII, p. 199; Shahnaz et al.; see figure 13.

<sup>39</sup> al-Kindi, p. 297.

decoction which was brought from India to treat ailments of the intestine, blood, sputum, ulcer of the sex organ, headache, and sore gums. In addition, Dioscorides describes the use of aloe to treat wounds, as a purgative, as an anaesthetic, and to prevent hair loss.<sup>40</sup> The Jewish Sages mention the 'alwin' which grew on the rooftops in the Land of Israel (Tosefta, Shevi'it, I, 12).<sup>41</sup>

**PU:** Different kinds of aloe appear in 8 lists of *materia medica* (T-S Ar.35.252; T-S Ar.35.344; T-S Ar.43.317 (2); T-S Ar.51.53; T-S AS 176.22; T-S AS 179.132; T-S AS 180.199; T-S NS 279.57) and in 13 prescriptions: for a topical application (T-S Ar.30.99), weak eyesight and migraine, as written by Maimonides (T-S Ar.30.286) and in a letter describing special treatment for eye diseases such as inflammation, dimness of vision, and dilation of the pupils (T-S NS 327.23). It is also mentioned in recipes for eye diseases (T-S Ar.44.162) and for unknown uses (T-S NS 151.52; T-S AS 183.216; T-S Ar.42.152; T-S AS 176.494; T-S K25.212; T-S NS 306.41; T-S NS 225.108), including a twofold appearance in a prescription named *ma'jūn hibbat allāh* (T-S Ar.34.305).

**TU:** Aloe is mentioned in several recipes for unknown use in medical books (T-S Ar.11.6; T-S Ar.35.327; T-S AS 176.358; T-S AS 177.200; T-S AS 180.183, T-S AS 181.232). In some fragments it is present as one of the simples in prescriptions for the treatment of eye complaints such as weakness and dimness of vision and drooping of the eyelids (T-S Ar.41.40), and as a purgative (T-S Or. 1080.1.72).<sup>42</sup>

**OMU:** al-Kindi describes the wide medicinal applications of aloe, which was an ingredient in toothpaste and in remedies for the treatment of eye diseases, insanity, epilepsy, excess sweat, and abscesses.<sup>43</sup> Ibn Māsawayh describes different kinds of aloe, classifies them according to their medicinal qualities and suggests the use of the substance to fortify the stomach, the nervous system, and the liver.<sup>44</sup> Maimonides prescribes aloe from the island of Socotra as an ingredient in a remedy for the treatment of haemorrhoids, stomach diseases, bleeding, and wounds, and as a purgative.<sup>45</sup> Benevenutus states in his book that aloe is a component in a remedy called the 'Jerusalemite pill' used for the treatment of

<sup>40</sup> Dioscorides, III.25.

<sup>41</sup> On the history of aloe see Haller, pp. 647–650.

<sup>42</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>43</sup> Cumulative references in: al-Kindi, p. 297; Ibn Sina, pp. 415–416.

<sup>44</sup> Levey, Ibn Masawayh, p. 401.

<sup>45</sup> Maimonides, Aphorisms, 9:46, 50; 13:13; 44, 47; 15:56; 17:38; 21:29; 22:63.

cancer.<sup>46</sup> Dāwud al-Anṭākī describes aloe and some medicinal applications as ‘cleaning the brain’, respiratory problems, chest pains, stomach disorders, skin disease, wounds, leprosy, and haemorrhoids.<sup>47</sup> It was also used as a carminative and to clear obstructions.

**TM:** In Iran, *Aloe perryi* is used as a natural purgative<sup>48</sup> and in Egypt *Aloe succotrina* is used to clean wounds and to induce menstruation.<sup>49</sup> Yeminite Jews apply fresh aloe decoction to cure wounds in the mouth, eye, and nose, and for external bleeding. The dried fluid is used as a strong purgative, as a treatment for intestinal disorders, to prevent dizziness, to cure the swelling of sex and urinary organs, and to cure rheumatism.<sup>50</sup> Similar applications were known among the Babylonians.

**TAI:** Socotrine aloes are mentioned in a recipe for soap tablets (T-S Ar.42.20). In a letter found in the Genizah dated 1060 CE, which was sent by Yosef Ben Yeshu‘a of Tripoli to Nahray Ben Nissim, ‘šabar asqūtri’ is mentioned in connection with the trade in medicinal substances by the Jews of the Middle East (Bodl. MS Heb d 66, f.60).<sup>51</sup> Nahray was a wholesale merchant of high repute who worked for fifty years (1045–1096); one of the commodities he dealt in was the aloe.<sup>52</sup> A letter found in the Genizah dated 1045 CE describes the purchase of relatively inexpensive aloe in Jerusalem and its transfer to Fustat (DK XV).<sup>53</sup> According to 11th-century Genizah fragments, aloe was traded in Cairo and Jerusalem.<sup>54</sup> Other Genizah fragments attest to its commerce in Alexandria, Cairo, Mazara, Mahdiyya, and Palermo.<sup>55</sup> Aloe is mentioned in a customs list of taxable materials traded in Acre under Crusader rule.<sup>56</sup> It was also exported from Egypt to Europe among other Eastern drugs and spices.<sup>57</sup> Evidence of the continuation of such exports in the 15th century is found in the accounting books of Italian trading businesses which describe the purchase of four packets of aloe as well as clove, scammony, cotton, and fabrics that were bought in Acre and

<sup>46</sup> Benevenutus, p. 33.

<sup>47</sup> al-Antaki, p. 222. Cf. al-Biruni, II, p. 8.

<sup>48</sup> Hooper, p. 83.

<sup>49</sup> Ducros, p. 141.

<sup>50</sup> Reiani, p. 9, no. 6.

<sup>51</sup> Gil, no. 496b.

<sup>52</sup> Goitein, Society, I, 154.

<sup>53</sup> Gil, no. 485.

<sup>54</sup> Goitein, Society, see indices.

<sup>55</sup> Gil, Kingdom, see indices.

<sup>56</sup> Assises, p. 174.

<sup>57</sup> Ashtor, Trade, p. 53.

shipped to Italy.<sup>58</sup> Aloe was evidently an important commodity in international medieval trade.<sup>59</sup>

### Aloe wood

Agallochum, Indian Aloe Tree; *Aquilaria agallocha* (Thymelaeaceae), A: ‘ūd, ‘ūd ḥabb, ‘ūd bukhūr, ‘ūd al-hindī<sup>60</sup>

**D&H:** Tall evergreen tropical tree, with a smooth pale trunk and thin leathery leaves and yellow-green flowers. The ‘aholim’ and ‘aholot’ (aloes) mentioned in the Bible as varieties of spices (Psalms 45:9; Proverbs 7:17; Song of Songs 4:14) are identified by some researchers as the species *Aquilaria agallocha* and *Aquilaria malaccensis*.<sup>61</sup> Dioscorides states that the agallochon tree was an aromatic, native to India and Arabia. The wood was used as perfume, incense and a chewing substance to sweeten the breath. Its medical uses were for curing the liver and dysentery, and treating stomach upsets.<sup>62</sup>

**PU:** The plant figures in 8 lists of *materia medica* (T-S Ar.34.341; T-S Ar.35.327; T-S Ar.35.366; T-S Ar.43.317; T-S AS 177.200; T-S AS 180.189; T-S AS 183.159; T-S NS 305.69) and 11 prescriptions: for unknown uses (T-S Ar.43.338 [2]; T-S Ar.35.327; T-S Ar.39.451; T-S NS 151.52; T-S NS 164.98; T-S NS 225.108; T-S Ar.39.211), as an aphrodisiac (T-S NS 164.159), for ‘rubb’ (jam) (T-S AS 148.27), for itch (T-S Ar.39.335), and as a linctus and an ointment (T-S AS 147.192).

**TU:** Aloe wood appears in medical books (T-S Ar.41.78) dealing with fevers (T-S NS 90.52), *materia medica* (T-S Ar.40.157; T-S Ar.41.29; T-S Ar.43.218; T-S AS 177.407; T-S NS 327.93; T-S NS 305.45), pharmacopoeias (T-S Ar.40.91; T-S Ar.41.96; T-S Ar.42.199; T-S Ar.43.205; T-S Ar.45.33; T-S Ar.51.76; T-S NS 90.61; T-S NS 222.43; T-S AS 179.110; T-S Or.1080.3.39), and other fragments (T-S Ar.38.76; T-S NS 222.19; T-S NS 297.48; T-S NS 297.56).<sup>63</sup>

**TAI:** Aloe wood was traded in between Cairo and Alexandria, and was exported to the Maghreb and Sicily (Būṣīr, Mahdiyya, Daharajat, Safa-

<sup>58</sup> Ibid., p. 299.

<sup>59</sup> Praver, History, p. 125.

<sup>60</sup> Issa, p. 10, no. 10.

<sup>61</sup> Chizik, p. 756; Low, II, 104; Maimonides, Regimen, p. 106; Maimonides, Glossaire, no. 296; Feldman, p. 233; Feliks, World, pp. 124, 125.

<sup>62</sup> Dioscorides, I.21.

<sup>63</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

kats) according to merchants' letters, mainly of the 11th century (Bodl MS Heb b3, f.17; Bodl MS Heb d 76, f.57; Bodl MS Heb a 2, f.17; Bodl MS Heb b s, f.16; Bodl MS Heb a 2, f.20; Bodl MS Heb b 3, f.26; ENA NS 2(I), f.13; Gottheil and Worrell 11,12; T-S Misc. 28.250; T-S 12.495; T-S 13J9.15; T-S 16.339; T-S 8J20.9; T-S Or.1080.3.35).<sup>64</sup> Aloe wood is mentioned in a Genizah letter (dated 1045) from Yitzhak ben David to his partner in Jerusalem, Makhluḥ ben Azariah, who was an active merchant in Syria and the Land of Israel. The writer thanks Makhluḥ for having purchased the aloe wood for him, and explains that he sold it at a good profit since there was great demand for it in Fustat, even as sawdust.<sup>65</sup>

**OMU:** al-Kindī notes the use of aloe wood to treat an enlarged head and bad respiration, to eliminate caries, to polish the teeth, and for mouth protection.<sup>66</sup> Shabbetai Donolo mentions aloe wood, which is also named in a list of plants he tested for curative purposes.<sup>67</sup> Maimonides describes the use of aloe wood in compound medications aimed at arousing the desire for coitus, increasing sexual pleasure, and stiffening the penis. He also notes that it is a component of the 'greater *'aṭrīfaḥ*', a medication that is especially good for boosting the spirit, and is considered a hot and dry drug.<sup>68</sup> Ibn al-Bayṭār describes the tree and notes its medical uses by classical physicians and those of his own period: as a carminative, a strengthener of nerves, and a diuretic.<sup>69</sup>

**TM:** In India the tree was listed among the best medicines to treat stomach problems, and was used to cure paralysis and dizziness. In Egypt, aloe wood served for constipation, as a disinfectant, and as a medicinal substance by being smoked.<sup>70</sup> The wood of the tree was used in certain of the countries in the Far East as incense; it contains ethereal oils that are used in the perfume industry and are especially effective in preventing rot.<sup>71</sup>

<sup>64</sup> Gil; Gil, Kingdom; Goitein, Society, see indices.

<sup>65</sup> Gil, II, p. 179, no. 485a.

<sup>66</sup> al-Kindī, nos. 6, 106. Compare Ibn Sina, pp. 298–299.

<sup>67</sup> Donolo, p. 22, n. 286, p. 75, n. 55.

<sup>68</sup> Maimonides, Aphorisms, 21:75; Maimonides, Sexual, Introduction, 15, 16; Maimonides, Regimen, 2:10; 3:11.

<sup>69</sup> Ibn al-Baytar, al-Jami, III, 143; Leclerc, no. 1603. Compare al-Antaki, pp. 241–242.

<sup>70</sup> al-Kindī, p. 308, no. 210; Ducros, p. 167.

<sup>71</sup> Uphof, p. 43.

## Alum

*Stypteria* ( $\text{Alk}(\text{SO}_4)_2 \cdot 12 \text{H}_2\text{O}$ ), **A:** **shabb** (*yamānī*, *‘irāqī*)<sup>72</sup>

**D&H:** Alum is a composition of different salts of metals with distilled water. The prototype of this group of materials is natural alum saltpetre. Alum is a natural astringent and therefore has been used throughout history in the tanning industry, as an aftershave, and to stop bleeding.<sup>73</sup> In ancient Babylonia, white as well as black alum were used in chemical technologies and in medicine. The black kind was manufactured by exposing the alum to plant decoction.<sup>74</sup> White alum has been used to wash the mouth and the nose, stop bleedings and treat skin diseases, scabies, gonorrhoea, dysentery, and eye inflammations. Dioscorides describes different types of *stypteria* and their medicinal uses which are similar to those in ancient Babylonia. Dioscorides adds the use of the alum to treat leprosy, infected gums, and ear disorders.<sup>75</sup>

**PU:** Different kinds of alum figure in 2 lists of *materia medica* (T-S Ar.43.315; T-S NS 306.117) and in 6 prescriptions: for cleaning or treating the teeth (T-S Ar.39.451), for unknown uses (T-S Ar.38.29; T-S Ar.40.141; T-S Ar.41.110; T-S AS 182.167; T-S NS 265.62), and in an alchemical astrological preparation (white alum, T-S 8J14.3).

**TU:** Alum is mentioned in medical books as an ingredient in a recipe for dyeing hair black (T-S Ar.40.121), as ointment for eye ailments (T-S NS 90.6 verso), in recipes for unknown uses (T-S Ar.42.46), in quasi-medicine (T-S NS 222.8), and in books of *materia medica* (T-S Ar.43.317). Yemenite alum was included in compounds for unknown medical uses (T-S NS 90.64; T-S AS 179.26), in a prescription for topical use (T-S NS 163.94), and to treat loss of teeth (T-S NS 306.73).<sup>76</sup>

**OMU:** ‘Shabb aṣfar’ (yellow alum) is mentioned in the Ḥaram archives as a substance sold at drug sellers’ stands in the market of Jerusalem during the Mamluk period.<sup>77</sup> It was used in different industries, yet it is clear that it was also sold for cosmetic and medicinal uses. al-Kindī states that the Yemenite alum, ‘shabb yamānī’, was a component in a remedy for toothache and in toothpaste.<sup>78</sup> He also reports the medicinal use of

<sup>72</sup> Maimonides, Glossaire, no. 368.

<sup>73</sup> *HE*, IV, pp. 487–488, see figure 14.

<sup>74</sup> Levey, *Chemistry*, pp. 158–164.

<sup>75</sup> Dioscorides, V. 123.

<sup>76</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>77</sup> Lutfi, p. 292.

<sup>78</sup> al-Kindī, nos. 78, 103.

yellow alum, which is probably the unpurified substance.<sup>79</sup> Maimonides asserts that Yemenite alum is the main component in a preparation that ‘causes sexual desire among men’ and is also used for ‘shaving without hazard.’<sup>80</sup> al-Qazwīnī mentions the alum stone ‘ḥajar alum’ as a remedy for bleeding, wounds, and toothache, and as an astringent.<sup>81</sup> Ibn al-Bayṭār adds that the alum is used to clear and purify water and wine.<sup>82</sup>

**TM:** Babylonian and Yemenite Jews, like other inhabitants of Middle Eastern countries, have traditionally used alum for the treatment of eye diseases and inflammation, improving eyesight, gums, and teeth, curing wounds, and preventing bleeding. The substance was also used to cure skin ailments, combat lice, strengthen hair roots, and treat burns, earache, cough, and tuberculosis.<sup>83</sup>

**TAI:** Alum was an important commodity and a medicinal substance in the medieval eastern Mediterranean. The main centre for alum manufacture in the Middle Ages was in the deserts of Egypt, whence the high quality product was sold by Bedouins. This production was a state monopoly in the 12th and 13th centuries, and according to historical sources the alum was distributed throughout the Middle East and Europe.<sup>84</sup> Many Genizah fragments, mainly merchants’ letters of the 11th century, contain data on trading alum between Cairo, Alexandria, Mahdiyya, Morocco, and Spain. One of the most important traders was Nahray b. Nissim.<sup>85</sup> Alum was also sold to Europeans traders.<sup>86</sup> In an inventory of customs duties at the Acre port (13th cent.), alum is mentioned as a substance which was transported to Europe via the Levant.<sup>87</sup> Alum is recorded in the Venice customs list (1233 CE) as well.<sup>88</sup>

## Amomum

*Amomum sp. (racemosum, maximum, cardamomum)* (Zingiberaceae),

**A:** ḥamāmā, qāqulla<sup>89</sup>

<sup>79</sup> Ibid., no. 105. See also: p. 292, no. 165.

<sup>80</sup> Maimonides, *Sexual*, 10; 16:2.

<sup>81</sup> al-Qazwini, p. 200.

<sup>82</sup> Ibn al-Baytar, *al-Jami*, III, pp. 53–54; Leclerc, no. 1279.

<sup>83</sup> Reiani, no. 182; Ben-Yakov, pp. 609. Further references on p. 696.

<sup>84</sup> In detail: Ashtor, *Levant*, p. 35, notes 29–30.

<sup>85</sup> Goitein, *Society I*, p. 154.

<sup>86</sup> See Gil, *Kingdom*, and Gil indices; Goitein, *Society I*, p. 45.

<sup>87</sup> Assises, p. 174.

<sup>88</sup> Venice Laws, p. 285.

<sup>89</sup> Issa, p. 13, nos. 6–12, Maimonides, *Glossaire*, p. 20, no. 325.

**D&H:** Tropical weeds with a rizhome, whose fruit and seeds are fragrant with a distinctive taste. Dioscorides describes *Amomon*<sup>90</sup> and its astringent properties, its heat and dryness, and also its effect as a soporific, and against headaches, swellings, and scorpion stings.<sup>91</sup> Ibn al-Bayṭār identifies the ‘ḥamāmā’, and notes that it is mentioned in the books of Galen.<sup>92</sup>

**PU:** Different kinds of *amomum* figure in a M.M. list (T-S Ar.29.179) and in 9 prescriptions: for eye treatment (T-S AS 159.241), cleaning or treating the teeth (T-S Ar.39.451), and for unknown uses (T-S Ar.43.338; T-S AS 173.3; T-S Ar.41.81; T-S Ar.43.338; T-S AS 182.242; T-S AS 173.3; T-S Ar.30.291).

**TU:** *Amomum* is mentioned in medical books in prescriptions for palpitation, theriac, purgative, general tonics, indigestions, haemorrhoids, looseness of bowels, stomach ailments, and colic (T-S Ar.42.199; T-S Ar.43.320; T-S Ar.44.187; T-S Ar.45.28; T-S Or.1080 3.11). It also appears in general medical books (T-S Ar.40.5; T-S Ar.40.91; T-S Ar.40.104; T-S Ar.43.98) and books on fevers (T-S Ar.), palpitation (T-S Ar.44.149), and inflammations (T-S Ar.44.91); in lists of *materia medica* (T-S Ar.39.208; T-S Ar.40.157; T-S Ar.44.76), pharmacopoeias (T-S Ar.40.91; T-S Ar.41.96; T-S NS 90.61; T-S AS 176.400; T-S Or.1080.3.39; T-S Or.1081.1.6), and other fragments (T-S Ar.38.9; T-S Ar.38.76; T-S Or.1081 1.6).<sup>93</sup>

**OMU:** According to the physician Assaf, *amomum* was a medicine for the stomach, to soften wounds, to heal scorpion stings, to cure eye diseases, and to soothe stomach pains.<sup>94</sup> Maimonides asserts that it is a hot and dry drug.<sup>95</sup> Ibn al-Bayṭār describes the plant, noting mainly its resemblance to a raceme, and the similarity of its leaves to those of the bryony. He also reports on the astringent and dehydrating qualities of the two species. The plant served among other things as a soporific, to relieve headaches, to reduce swellings, to cure the liver, kidneys, and scorpion stings, to dispel gases, to cleanse the stomach, and to fortify the liver.<sup>96</sup> al-Dimashqī, who knew Safed and its environs, lists the ‘ḥamāmā’ among the 90 kinds of drugs found in the region of Mt. Lebanon whose

<sup>90</sup> The editor identifies it with *Amomum subulatum*.

<sup>91</sup> Dioscorides, I.14.

<sup>92</sup> Ibn al-Baytar, Tafsir, p. 115, nos. 1015. Compare Serapion, no. 234.

<sup>93</sup> Isaacs & Baker, personal observations and Isaacs's unpublished notes.

<sup>94</sup> Assaph, IV, 394.

<sup>95</sup> Maimonides, Aphorisms, 9:88; 21:80.

<sup>96</sup> Ibn al-Baytar, II, p. 30; Leclerc, no. 695. Cf. Ibn Sina, pp. 313–314.



picking could provide a livelihood. The plant was one of the ingredients of the 'redeeming theriac'<sup>97</sup>

**TM:** The seeds of the species *Amomum subulatum* are used in Iraq as a substitute for 'hal' (*Elettaria cardamomum*), both as a spice and for medical uses, mainly to reduce gases and as a tonic.<sup>98</sup> The roots of a few species are used in the framework of European TM against colds, and the seeds of other species are used to improve digestion and to treat colds and coughs.<sup>99</sup>

**TAI:** *Amomum* was imported into Sicily (11th cent.)<sup>100</sup> and traded in Qayrawān, Alexandria, and Cairo.<sup>101</sup>

## Anise

*Pimpinella anisum* (Apiaceae), **A:** anīsūn, yānīsūn<sup>102</sup>

**D&H:** Anise is an annual plant native to Asia Minor. It is tall (up to 80 cm.), hairy-stemmed and strong-scented, and has feathery leaves and white, umbrella-shaped blossoms with double-seeded fruits.<sup>103</sup> Anise is one of the most ancient seed-spices in the world, and aniseed has been found in the tombs of the Pharaohs. In early times it was cultivated in Egypt, Asia Minor, and the Greek islands. During the Roman period its use became widespread and it was grown as an agricultural crop throughout the Empire, including the Mediterranean littoral, France, and England. Today it is also grown in India, Africa, Spain, and Italy.<sup>104</sup> Dioscorides describes the use of the *anison* plant for treating the bites and stings of poisonous creatures and to relieve headache and earache.<sup>105</sup>

**PU:** Different kinds of anise figure in 4 lists of *materia medica* (T-S AS 182.99; T-S Ar.39.307; T-S AS 184.34; T-S NS 325.127) and in 12 prescriptions: for eye complaints (T-S NS 218.21), for an invalid's diet (T-S Ar.42.189), weak eyesight and migraine, as written by Maimonides (T-S

<sup>97</sup> al-Dimashqi, p. 199.

<sup>98</sup> Hooper, p. 84.

<sup>99</sup> Grieve, p. 160; Uphof, p. 32.

<sup>100</sup> Gil, Kingdom, I, p. 565; Ben-Sasson, pp. 397, 402, no. 86.

<sup>101</sup> Gil, Kingdom, III, p. 865, no. 562; IV, p. 653, no. 820.

<sup>102</sup> Maimonides, Glossaire, p. 20, no. 19; Dinsmore & Dalman, no. 758; Issa, p. 140, no. 5.

<sup>103</sup> Plants & Animals, XII, p. 93.

<sup>104</sup> Loewenfeld & Back, p. 55.

<sup>105</sup> Dioscorides, III.65.

Ar.30.286), and unknown uses (T-S Ar.30.227; T-S AS 173.3; T-S AS 177.417; T-S AS 183.216; T-S NS 297.260; T-S NS 306.41; T-S Ar.41.81; T-S Ar.40.87; T-S NS 305.75(76)).

**TU:** Anise is mentioned in lexica of *materia medica* (T-S Ar.43.317; T-S AS 141.49A; T-S AS 184.293) and general medical books as a simple in prescriptions for the treatment of palpitation (T-S NS 305.116) and eye complaints, such as dimness of vision, inflammation, dilation of the pupils; in one case anise is noted in a letter to a higher authority, in which the use of eye drops and certain lamellae is recommended (T-S NS 327.93). Aniseed is also mentioned in several recipes for unknown uses (T-S K25.212r; T-S NS 90.51v; T-S NS 326.41v; T-S AS 162.185; T-S AS 178.225; T-S AS 182.99r), in one for violet tablets (T-S Ar.40.130), in another lexicon of *materia medica* (T-S AS 167.17), and a patient is advised to imbibe a mixture of wine and aniseed with saffron before taking a bath (T-S AS 166.208).<sup>106</sup>

**OMU:** According to al-Kindī, *anīsūn* is a diuretic as well as a component in an ointment for treating the liver, in eye ointment and in a medication for treating stomach disorders.<sup>107</sup> Maimonides notes that anise is a constituent in a beverage for strengthening the heart, administered after an emetic. It is also an ingredient in ‘the great aṭrīfal’, which strengthens the heart and brain, and also a component in a light purgative. Boiled anise was used as a substitute for wine in a medicine to treat poisoning and was also one of the ingredients of theriac. It was considered a hot and dry drug.<sup>108</sup> al-Tamīmī (as quoted by Maimonides) states that ‘anison’ arouses sexual desire and heals the womb.<sup>109</sup> al-Ghazzī, the Muslim scholar, reports on the anise-growing in Damascus and its use as a constricting drug, a diuretic, and an emmenagogue, and for fever abatement and headache relief.<sup>110</sup> According to Ibn al-Bayṭār’s entry ‘anison’, this substance was a purgative, and the best kind came from Crete and Egypt.<sup>111</sup>

**TM:** Israeli Arabs use aniseed to reduce gases, especially in babies. Yemenite Jews use the ‘yansoon’ to regulate breathing, to increase appetite, to prevent constipation, to increase urine flow, and to relieve

<sup>106</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>107</sup> al-Kindī, nos. 114, 162, 225. Cf. Ibn Sina, pp. 243–244.

<sup>108</sup> Maimonides, Aphorisms, 13:6; 21:80; Maimonides, Regimen, 3:6, 11; Maimonides, Poisons, pp. 14, 93, 105, 107.

<sup>109</sup> Maimonides, Aphorisms, 20:86.

<sup>110</sup> Hamarneh, Plants, p. 240.

<sup>111</sup> Ibn al-Baytar, al-Jami, I, pp. 59–60; Leclerc, no. 159.

stomach pains, headaches and colds.<sup>112</sup> The Jews of Iraq customarily eat the roots and use the seeds for remedies.<sup>113</sup> In Iran and Iraq ‘anison’ is used mainly as an ingredient in a medication against cough<sup>114</sup> while in Egypt the seeds of the anise are used as a carminative, a stimulant and an emmenagogue.<sup>115</sup> Similar uses are made of this plant in Europe as well.<sup>116</sup> **TAI:** In a Genizah letter dated 1060, Yisrael Ben Natan of Jerusalem asks Nahray Ben Nissim in Fustat to send him half a qīrāt of anise (T-S Or. 1080 J15).<sup>117</sup> In a commercial document dated 1233, anise (anis) is mentioned as merchandise exported from the Levant to Europe.<sup>118</sup>

### Arsenic

Orpiment [Yellow Sulphide of Arsenic] Arsenic trisulphide ( $As_2S_3$ ), **A:** **zirnīkh, zirnīkh aṣfar.** Realger [Arsenic disulphide] ( $As_2S_2$ ), **A:** **zirnīkh aḥmar**

**D&H:** Arsenic is a chemical element with the atomic number 33. It appears in nature in three colours: grey, black, and yellow.<sup>119</sup> Arsenic was known in ancient times; Aristotle mentions a substance that is identified with red arsenic sulphate (Realger). Two kinds of arsenic were known in ancient Mesopotamia.<sup>120</sup> Theophrastus describes its active effect and Pliny gives it another name: Arrehniu.<sup>121</sup> Dioscorides mentions a few types of arsenic and notes that arsenic trisulphide (*arsenikon*) and arsenic disulphide (*sandarache*) are used clearing the voice and for the treatment of asthma, ulcers in the mouth and nostrils, other pustules, and baldness.<sup>122</sup> The researcher Muntner thought that it was the Arabs who added ‘zarnik’ to the world of poisons and described the use of the substance for poisoning.<sup>123</sup> Recently a theory has been put forward that the

<sup>112</sup> Reiani, p. 39, no. 88.

<sup>113</sup> Ben-Yakov, p. 506. Cf. uses by other communities in Krispil, pp. 470–475.

<sup>114</sup> Hooper, p. 147. In detail: al-Rawi & Chaakravarty, p. 74.

<sup>115</sup> Ducros, p. 12.

<sup>116</sup> Grieve, pp. 41–42; Albert-Puelo, Fennel.

<sup>117</sup> Gil, p. 142, no. 470.

<sup>118</sup> Praver, Colonial, p. 478; Venice Laws.

<sup>119</sup> *HE*, VII, p. 1036.

<sup>120</sup> Levey, Chemistry, pp. 39, 96; al-Kindi, p. 275, no. 126.

<sup>121</sup> Hooper, p. 190.

<sup>122</sup> Dioscorides, V, 121–122.

<sup>123</sup> Maimonides, Poisons, pp. 73–74.

arrival of arsenic in Europe in the Middle Ages, and its medical use as a rat poison (mainly in the 17th–18th centuries), caused a drastic reduction in the number of rats in Western European cities and indirectly the disappearance of pestilence and the black death epidemic.<sup>124</sup>

**PU:** Different kinds of arsenic figure in 4 lists of *materia medica* (T-S Ar.39.487; T-S Ar.39.487; T-S AS 184.321 [2]) and in 3 prescriptions: a depilatory for hairy women (T-S Ar.11.22), for unknown uses (T-S NS 151.52), and soap (T-S Ar.42.20).

**TU:** Arsenic is mentioned in several medical books in recipes for the treatment of necrotic lesions [compound] (T-S AS 172.16), in the preparation of compounds (T-S NS 90.64), one of which contains burnt arsenic as well (T-S AS 176.403). It appears as a simple in recipes for unknown uses (T-S NS 306.32; T-S NS 306.45v). An interesting case was discovered on the margin of a fragment dealing with natural history that quotes from Aristotle and Plato (T-S NS 327.81). It is also mentioned in alchemical formulae with other minerals (T-S K 25.83; T-S 20.20; T-S 16.270r). Red and yellow arsenic appear in a prescription for the treatment of necrotic lesions (T-S AS 172.16).<sup>125</sup>

**OMU:** According to al-Kindī, arsenic disulphide is an ingredient in a medication for stomach ulcers and in toothpaste for the treatment of rotten teeth.<sup>126</sup> Al-Tamīmī describes yellow arsenic as a simple in a prescription for gum problems.<sup>127</sup> al-Bīrūnī describes the various types of arsenic, their toxic qualities, and their medicinal uses.<sup>128</sup> al-Rāzī mentions orpiment in a recipe for soap.<sup>129</sup> According to Maimonides, yellow and red *zarnīkh* were components in a solution for the removal of hair without causing harm or injury.<sup>130</sup>

Two types of arsenic are defined by him as medicines that were ‘nearly as powerful as fire’<sup>131</sup> and were used for the treatment of ‘ugly boils that were putrid’. In the entry ‘ḥajar al-’arsin’, al-Qazwīnī asserts that it was known also as ‘al-zarnīkh’, and that some of its types were used for the

<sup>124</sup> Konkola.

<sup>125</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>126</sup> al-Kindī, nos. 26, 97, 103. On additional uses: *ibid.*, p. 275, no. 126; Cf. Ibn Sina, p. 304.

<sup>127</sup> al-Tamimi, I, pp. 60–61.

<sup>128</sup> al-Biruni, I, 166; II, 57; see also Amar & Sari, pp. 66–67, 111–112.

<sup>129</sup> Stapleton, pp. 370–371.

<sup>130</sup> Maimonides, *Sexual*, 16:1–2.

<sup>131</sup> Maimonides, *Aphorisms*, 15:9. In connection with medical qualities, see *ibid.*, 21:88; 23:101.

removal of hair. al-Qazwīnī also notes that ‘arsin’ is a fatal poison, but if it is burnt and its ashes are used to rub the teeth it will remedy them. Other physicians who are quoted recommend the external use of arsenic for curing skin diseases and wounds, as well as to destroy lice, treat haemorrhoids, and remove hair. al-Qazwīnī also states that yellow arsenic is used for eradicating flies.<sup>132</sup>

**TAI:** Arsenic was a commodity which was traded in the Mediterranean (imported from Europe) by merchants such as Nahray b. Nissim<sup>133</sup> and others: it is mentioned in connection to the cities of Tyre, Ramlah, Alexandria, and Cairo (Bodl MS Heb d 66, p. 42; ENA NS 22, f.25r; T-S 12.780).<sup>134</sup> In the list of customs duties on merchandise in Crusader Acre two kinds of orpiments feature that were imported and exported, and even traded in the city.<sup>135</sup>

**TU:** In Iran and Iraq, arsenic sulphate is used as a general medicine to reinforce the nerves. Mixed with lime, it is used to remove hair.<sup>136</sup> Arsenic compounds have an invigorating biological effect. In small doses they spur bodily activity such as the production of red blood cells and the improvement of appetite. In the past medicinal use was made of inorganic mixtures of arsenic to treat skin diseases (mainly in the 16th–18th centuries). Since this treatment involved bodily injury and toxicity, it was discontinued in modern medicine. However, the use of organic mixtures of arsenic was resumed during the 20th century in the framework of chemotherapy, and in medicines for syphilis and recurring malaria.<sup>137</sup>

## Bamboo

Chalk, tabashir, *Bambusa vulgaris* (Poaceae), **A:** **ṭabāshīr**<sup>138</sup>

**D&H:** The bamboo is a tall grass, common in tropical habitats, that grows rapidly; the stem is wide and round (10 cm in diameter). Bamboo contains a large amount of silica and in medieval times it was burned as

<sup>132</sup> al-Qazwini, p. 199. Compare Ibn al-Baytar, II, 160–161; Leclerc, no. 1100. Cf. also al-Antaki, pp. 177–178.

<sup>133</sup> Goitein, Society, I, 154.

<sup>134</sup> Gil, III, p. 210, no. 494, Gil, Kingdom, II, p. 219, no. 85; III, p. 265, no. 375.

<sup>135</sup> Beugnot, II, pp. 176, 180.

<sup>136</sup> Hooper, p. 190.

<sup>137</sup> *HE*, VII, 1040.

<sup>138</sup> Maimonides, Glossaire, p. 55, no. 171.

part of the extraction process. The ashes, which form crystals of a bluish white, hard light substance.<sup>139</sup> were called *ṭabāshīr*. This substance was used in various ancient cultures to treat fever, asthma, cough, and paralysis, and as an aphrodisiac.

**PU:** Chalk figures in 6 lists of *materia medica* (T-S Ar.30.274; T-S Ar.35.252; T-S Ar.35.344; T-S Ar.39.451; T-S AS 182.233; T-S AS 184.234) and as a simple in 11 prescriptions for unknown uses (T-S Ar.30.305 [2]; T-S Ar.39.211; T-S Ar.39.451; T-S Ar.43.338; T-S NS 327.40; T-S AS 219.163; compound, T-S AS 177.40; powder, T-S Ar.40.87r; T-S NS 327.40; white, T-S Ar.39.274; T-S Ar.42.110).

**TU:** Chalk is mentioned in medical books in preparations for jaundice with acute fever and palpitation (T-S NS 305.116), loss of teeth (T-S NS 306.73), strengthening the stomach and against diarrhoea resulting from weakness of the liver (T-S Ar.40.51), weakness of the liver and bile corruption (T-S AS 172.7); and as a powder for the treatment of diarrhoea (T-S Ar.40.179r), quartan fever, and burning black bile and phlegm (T-S NS 306.74).

It is also mentioned as a simple in a lexicon of *materia medica* (T-S Ar.35.252; T-S Or.1081.J60) and in recipes for unknown uses, mainly as powder (T-S Ar.42.116r; T-S AS 179.328; T-S AS 219.163); one bears the name of Abū 'Alī (T-S Ar.39.211r). Mountain chalk is mentioned in another lexicon of *materia medica* (T-S Ar.41.37). White chalk was used to treat sufferers of bubo and scrofula (T-S Ar.39.297).<sup>140</sup>

**OMU:** According to al-Kindī chalk was used to treat mouth pustules and throat problems, to protect the soft gum from heat, and as a sternutative and for nightblindness.<sup>141</sup> Nathan ben Yoel Falaquera (13th century) writes that chalk is used to treat eye diseases, pulse rate, and thrush.<sup>142</sup> Maimonides advised the Egyptian ruler to use chalk and other substances to strengthen the heart.<sup>143</sup>

**TM:** In Iran and Iraq it was used to treat menstruation problems.<sup>144</sup> Yemenite Jews used it to fortify the stomach and heart, for fever, cold,

<sup>139</sup> al-Kindī, p. 300, no. 186.

<sup>140</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>141</sup> al-Kindī, p. 300, no. 186.

<sup>142</sup> Amar & Buchman, p. 191.

<sup>143</sup> Maimonides, Answers, p. 145, no. 19.

<sup>144</sup> Hooper, pp. 90, 207.

haemorrhoids, eye diseases, and wounds.<sup>145</sup> In Egypt today it is used in dry collyria, as a tonic, and as an astringent.<sup>146</sup>

**TAI:** *Ṭabāshīr* was one of the minerals traded in the Mediterranean region according to Genizah documents.<sup>147</sup> It was traded between the cities of Mahdiyya, Cairo, Qayrawān, and Palermo in Sicily.<sup>148</sup>

## Basil

*Ocimum basilicum* (Lamiaceae), **A:** *rayhān*, *ḥabaq*, *bāḍarūj*, *bāsiliqūn*<sup>149</sup>

**D&H:** The sweet or common basil is an annual plant, tall (60 cm) with square stems, and branching spikes, white flowers, and small, black seeds.<sup>150</sup> The term ‘*rayhān*’ is used of scented plants in general and of the basil plant in particular. The scientific term ‘*basileus*’ means ‘king’ because of its unique perfume. Dioscorides notes that *okimon*, which is identified with basil, is used for improving eyesight and treating depression, swellings, and scorpion stings.<sup>151</sup>

**PU:** Basil (T-S Ar.35.366; T-S Ar.34.341; T-S Ar.34.341; T-S Ar.35.82; T-S Ar.39.450; T-S Ar.39.487; T-S AS 176.22; T-S NS 279.57; T-S NS 164.12; T-S AS 181.193) and basil seeds (T-S Ar.39.451; T-S Ar.43.317; T-S AS 184.234; T-S NS 164.12) figure in 14 lists of *materia medica* and in 12 prescriptions: for an invalid’s diet (seeds, T-S Ar.42.189), fever (T-S AS 155.277), cleaning or treating the teeth (T-S Ar.39.451), a purgative (T-S Ar.39.458), and unknown uses (T-S Ar.40.141; T-S AS 179.283; seeds, T-S Ar.42.110; T-S Ar.43.338; T-S Ar.43.338; T-S NS 306.48; T-S Or.1081.J.39, T-S 12.33r).

**TU:** Basil is mentioned in medical books in recipes for colds, stomach ailments and colic; as an emmenagogue, abortifacient, and general tonic (T-S Ar.11.11; T-S Ar.43.320; T-S Ar.45.28; T-S Ar.45.30); for unknown uses (T-S Ar.42.11r); in a M.M. lexicon (T-S AS 182.183). It likewise appears in general medical books (T-S Ar.42.167; T-S Ar.43.138; T-S Ar.43.154); books of ophthalmology (T-S Ar.39.191; T-S Ar.44.13; T-S

<sup>145</sup> Reiani, p. 11, no. 14.

<sup>146</sup> Docrus, p. 84, no. 148.

<sup>147</sup> Goitein, Society, I, p. 156.

<sup>148</sup> Gil, Kingdom, III, p. 283, no. 380, p. 865, no. 562, p. 903, no. 574, Ben-Sasson, p. 273.

<sup>149</sup> Maimonides, Glossaire, p. 27, no. 48; p. 100, no. 360; Issa, p. 126, no. 4; Dinsmore & Dalman, no. 1336; Serapion, p. 497, no. 73; Ducros, p. 64.

<sup>150</sup> Plants & Animals, XII, p. 96; Loewenfeld & Back, pp. 60–61.

<sup>151</sup> Dioscorides, II.171.

Ar.45.41; T-S NS 222.18; T-S AS 178.288), of fevers (T-S Ar.44.215), of M.M. (T-S Ar.39.369; T-S Ar.44.218), in pharmacopoeias (T-S Ar.44.205; T-S NS 222.21; T-S NS 222.60; T-S NS 305.212), in QM (T-S Ar.40.44; T-S Ar.41.15; T-S Ar.41.115), and other fragments (T-S Ar.39.472; T-S NS 297.48; T-S NS 297.56; T-S Or.1080.13.33).<sup>152</sup>

**TAI:** al-Muqaddasī describes the crops grown in Jericho and mentions basil in addition to the dates and bananas.<sup>153</sup> Hamarneh states that basil grew in 'Ajlun and was part of the panoramic scenes of the childhood and medical practice of the physician Ibn al-Quff al-Karakī (13th century).<sup>154</sup> Ibn al-Bayṭār in his entry 'ḥamāḥim' describes the plant and lists its medicinal uses. He claims, quoting Ishāq ibn 'Imrān, that the 'wide-leaved 'al-ḥabaq al-bustānī' is called 'ḥabaq nabāt' in al-Shām, and has soft, green quadrangular stems, white flowers and seeds like that of the 'ḥabaq' which is a hot and dry type.'<sup>155</sup> Ibn al-Qayyim al-Jawziyya notes that basil, which was highly esteemed by the people of 'al-Shām' (Greater Syria) and Iraq, was called 'ḥabaq.'<sup>156</sup> al-Ghazzī describes 'ḥabaq', known in Greater Syria as basil, and lists ten different kinds that are used as remedies.<sup>157</sup> Evidence exists of its being grown in al-Shām, including Jericho and 'Ajlūn.<sup>158</sup>

**OMU:** al-Kindī notes two kinds of basil: one is a component in a medication for the poor<sup>159</sup> and the other a component in an ointment to treat rheumatism and as an eye ointment.<sup>160</sup> Shabbetai Donolo lists 'basilikon' among plants used for remedies.<sup>161</sup> According to Maimonides, basil is easily digestible, gives power 'to the spirit, and increases appetite'. It is an ingredient in a medicine 'useful for coitus and for scenting the breath' and also in a medicine that relieved 'deep distress and depression, and induces strong emotional desires.'<sup>162</sup> Ibn al-Bayṭār, in his entry 'Rayḥān sulaymān', states that basil is used among other things to treat erysipelas,

<sup>152</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>153</sup> al-Muqaddasi, p. 175.

<sup>154</sup> Hamarneh, Plants, p. 245.

<sup>155</sup> Ibn al-Baytar, al-Jami, II, p. 33; Leclerc, no. 704.

<sup>156</sup> Ibn al-Qayyim, p. 362.

<sup>157</sup> Hamarneh, Plants, p. 245.

<sup>158</sup> al-Muqaddasi, p. 175, Hamarneh, Plants, p. 245, Ibn al-Baytar, al-Jami, II, p. 33; Ibn al-Qayyim, p. 362, Hamarneh, Plants, p. 245.

<sup>159</sup> al-Kindi, no. 178.

<sup>160</sup> Ibid., nos. 139, 212.

<sup>161</sup> Donolo, p. 22, n. 283.

<sup>162</sup> Maimonides, Aphorisms, 20:49; 21:70, 75; Maimonides, Regimen, 2:20; Maimonides, Answers, 8; Maimonides, Sexual, Introduction, 3; 5:6; 16:2.



stomach ulcers, and scorpion stings.<sup>163</sup> al-Qazwīnī reports that basil is effective in staunching nosebleeds, cleansing and improving eyesight, opening blockages in the urinary tract, and treating scorpion stings.<sup>164</sup> It is also used to treat haemorrhoids and dizziness, and to reduce bad smells from the armpit.<sup>165</sup> It is made into an ointment for rheumatism and eye diseases; it reinforces the spirit, increases the appetite, scents the breath and body, relieves distress and depression, induces strong emotional desires, treats erysipelas, stomach ulcers, scorpion stings, and nosebleeds, improves eyesight, opens the urinary tract, and is a remedy for haemorrhoids and dizziness.<sup>166</sup>

**TM:** Yemenite Jews used the plant for decoration, as a perfume, and for the treatment of various kinds of skin rashes, wounds and scabies (eczema).<sup>167</sup> The Jews of Iraq frequently used the plant as perfume, for sauces to increase appetite, to induce sleep, to dress wounds, and strengthen the heart.<sup>168</sup> In Egypt the plant was used as a diuretic, to calm the nerves, and to treat heart and head disorders.<sup>169</sup> In Iran, basil seeds were used as a medication against influenza, gonorrhoea, and dysentery, while the blossoms served as a carminative, a diuretic and a stimulant.<sup>170</sup>

## Bean

Broad bean, *Vicia faba* (Fabaceae), **A:** **fūl, bāqilā**

**D&H:** Domesticated annual, the flowers are white with purple patches and the pods are big and thick. Probably the most important legume in human history, due to its high protein content. It was mentioned in the Bible (Ezekiel 4, 9) and in the Talmud.<sup>171</sup>

**PU:** Bean figures in 9 prescriptions: for haemorrhoids (T-S Ar.44.181), swellings (plaster, T-S AS 178.32), cough (T-S K25.116), stomach ail-

<sup>163</sup> Ibn al-Baytar, al-Jami, II, p. 148; Leclerc, no. 1075.

<sup>164</sup> al-Qazwini, p. 240. Cf. Ibn Sina, p. 274.

<sup>165</sup> Ibid., p. 251.

<sup>166</sup> al-Kindi, no. 178; Maimonides, Aphorisms, 20:49; 21:70, 75; Maimonides, Regimen, 2:20; Maimonides, Answers, 8; Maimonides, Sexual, Introduction, 3; 5:6; 16:2; Ibn al-Baytar, al-Jami, II, p. 148; al-Qazwini, p. 240. Cf. Ibn Sina, p. 274.

<sup>167</sup> Reiani, p. 35, no. 77.

<sup>168</sup> Ben-Yakov, pp. 53, 55, 268, 315, 361.

<sup>169</sup> Ducros, p. 112.

<sup>170</sup> Hooper, p. 145; al-Rawi & Chaakravarty, p. 69.

<sup>171</sup> Feliks, World, pp. 154–158.

ments (T-S NS 297.216), face and eyes (T-S Ar.35.363), wet ulcer (T-S NS 306.42), unknown uses (T-S Ar.42.152; T-S 13J6.14), and an alchemical astrological preparation (T-S 8J14.3).

**TU:** Bean flour is mentioned in medical books in recipes for preparing lozenges (T-S Ar.11.13r), treatment of inflammatory swellings of the breast with egg white and sesame oil [in a chapter numbered 15] (T-S Ar.40.171), and healing excessive lachrymation due to laughing, crying, exposure to heat, or cold winds (T-S Ar.42.5). It is also noted in as simple in recipes, one of which was extracted from Ibn Sīnā's *al-Qānūn* [cf. ed. Bulaq, III:302–303] (T-S Ar.41.96). Beans are mentioned in recipes for treating jaundice with acute fever and palpitation (T-S NS 305.116), a diet for weight increase [forty-day regimen] (T-S Ar.40.194), and in a list of simples (T-S AS 179.308).<sup>172</sup> A tasty Egyptian dish of beans and chickpeas, found in a fragment, provided Goitein his grounds for stating that 'beans could substitute for bread when the wheat failed'.<sup>173</sup>

**OMU:** Bean is mentioned by Ibn Sīnā as beneficial for the treatment of swellings, muscle pain, earsache, eye diseases, cough, and constipation. It was known as purgative and as a cause of headache and wind.<sup>174</sup> Ibn al-Bayṭār describes its application against internal diseases, swellings, and skin diseases, and to control hair growth.<sup>175</sup>

**TAI:** Beans, as a basic food staple and therefore an important commodity, are mentioned in several documents on trade between Cairo, Alexandria, and Būṣīr.<sup>176</sup>

## Bdellium

*Commiphora mukul* (Burseraceae), **A: muql, muql azraq**<sup>177</sup>

**D&H:** High spiny bush (up to 5 metres), grows wild in Africa and Asia in dry tropical conditions. Its bark contains adhesive, fragrant, grayish/yellowish resin which is used as incense and medicinal substance.

**PU:** Different kinds of bdellium figure in 7 lists of *materia medica* (T-S Ar.43.317; T-S Ar.39.450; T-S Ar.39.451 [2]; T-S AS 180.199; T-S AS 182.3; T-S NS 224.62; T-S AS 153.51) and in 9 prescriptions: lincti

<sup>172</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>173</sup> Goitein, *Society*, IV, p. 245.

<sup>174</sup> Ibn Sīnā, I, p. 278.

<sup>175</sup> Ibn al-Bayṭār, *al-Jamī*, I, pp. 77–78; Cf. al-Qazwīnī, p. 236.

<sup>176</sup> Gil, *Kingdom*, II, p. 860, no. 286; III, p. 874, no. 566, IV, p. 671, no. 826.

<sup>177</sup> Issa, p. 55, no. 5; Maimonides *Glossaire*, no. 230.

and ointment (T-S AS 147.192), an invalid's diet (T-S Ar.42.189), weak eyesight and migraine, as written by Maimonides (T-S Ar.30.286), and unknown uses (T-S Ar.39.184; T-S AS 183.216; T-S NS 327.97; T-S Or.1081.J.39; T-S NS 306.100 [2]; T-S Ar.41.81 [5]).

**TU:** Bdellium is mentioned in several medical books in prescriptions for the treatment of colic [aperients and lincti] (T-S Ar.43.142), and in one for unknown uses (T-S Ar.41.81r). Blue bdellium features in a recipe (for unknown uses) compiled by al-Dimashqī (T-S Ar.39.65), in a lexicon of *materia medica* (T-S AS 184.175), and in a recipe (powder) to treat diarrhoea and tone the stomach muscles (T-S Ar.40.180). Meccan bdellium is mentioned in a recipe for similar uses: strengthening the stomach and treatment of diarrhoea resulting from weakness of the liver (T-S Ar.40.51). False bdellium is found in a lexicon of *materia medica* (T-S AS 180.199) and in prescriptions for sciatica, varicose veins and diseases affecting the legs and nails (T-S NS 306.172), and for several unknown uses (T-S NS 327.100r; T-S AS 176.400; T-S AS 176.403). One of these has the name Abū al-Ḥayy written in Arabic script at the top of the margin (Or.1081 J39r).<sup>178</sup>

**OMU:** Ibn Sīnā describes bdellium as a cure for internal and external swellings, lung diseases, and cough.<sup>179</sup> Ibn al-Bayṭār, citing many early physicians, asserts that it dissolves kidney stones and cures swellings, coughs, haemorrhoids, and skin diseases. It also increases bile secretion of the body.<sup>180</sup> Dāwud al-Anṭakī adds that it cleans the lungs and the chest, helps in weight loss and expelling the fetus.<sup>181</sup>

**TAI:** Bdellium is mentioned in the letter of a merchant trading between Alexandria and Cairo.<sup>182</sup>

## Beet

*Beta vulgaris* (Amaranthaceae = Chenopodiaceae), **A: silq**<sup>183</sup>

**D&H:** Perennial with swollen edible red or white root, large green leaves.<sup>184</sup> The beet does not appear in the Bible, but some identify the

<sup>178</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>179</sup> Ibn Sina, I, pp. 362–363.

<sup>180</sup> Ibn al-Baytar, al-Jami, IV, pp. 162–163.

<sup>181</sup> al-Antaki, p. 230.

<sup>182</sup> Gil, Kingdom, IV, p. 587, no. 794; see the product, figure 15.

<sup>183</sup> Issa, p. 30, no. 21.

<sup>184</sup> Chevallier, p. 176.

'*to' mikhmar*' (Isaiah 51:20) as the beet (according to the Septuagint). Nor does the name appear in the Mishna, but most researchers identify the word 'tered' (Kil'ayim 1:3) with the beet (Bab. Talmud, Erubin, 29a). Many uses of the plant are described in the Talmud for food and for curative purposes (Bab. Talmud, Berakhot, 42a). Eating this plant was recommended for curing the heart, eyes, intestinal diseases, leprosy, and boils. It was also considered a general medication and a preparation for treating cracked skin.<sup>185</sup> At the end of the 16th century it was known that the root contained sugar, but only in the 19th century did its inherent industrial value begin to be grasped. In the 20th century the sugar beet industry developed in France and Germany.<sup>186</sup>

**PU:** Beet figures in 8 prescriptions: for topical application (T-S Ar.30.99 [the plant and its water]), swelling (T-S NS 194.70), and unknown uses (T-S Ar.30.305, T-S Ar.40.141, T-S NS 265.62, T-S Or.1080.1.87, T-S Ar.43.338).

**TU:** Beet appears in medical books (T-S Ar.39.161; T-S Ar.40.61; T-S Ar.40.66); its leaves were used to dye the hair black (T-S Ar.40.121). It appears in books on ophthalmology (T-S Ar.44.147) and inflammations (T-S Ar.44.91); in lists of *materia medica* (T-S Ar.41.138; T-S Ar.44.76; T-S Ar.44.193 T-S Ar.44.204), in pharmacopoeias (T-S Ar.39.139; T-S NS 305.212), in QM (T-S Ar.41.115; T-S Ar.43.70), and other fragments (T-S NS 224.43; T-S Or.1080.13.33).<sup>187</sup>

**OMU:** According to Ibn Waḥshiyya, in the al-Shām region the beet was considered a hot and dry drug suitable for curative purposes.<sup>188</sup> The Jewish physician Al-Kūhīn al-'Aṭṭār al-Isrā'īlī mentions several kinds of beet that were used for medicine.<sup>189</sup> Ibn al-Bayṭār quotes Abū al-'Abbās al-Nabātī who visited the Levant during the Ayyubid period and described a plant that he saw. The size of the root, he says, is like that of the carrot and its colour is reddish yellow.<sup>190</sup> According to this description the author was apparently describing the beet or one its varieties.<sup>191</sup>

<sup>185</sup> In detail: Feliks, *World*, p. 173; Feliks, *Kilayim*, p. 82; Feliks, *Yerushalmi*, p. 405.

<sup>186</sup> *Plants & Animals*, X, 58.

<sup>187</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>188</sup> *Ibn Wahshiya*, I, 608.

<sup>189</sup> Kohen, *al-Attar*, p. 235.

<sup>190</sup> *Ibn al-Baytar, al-Jami*, III, p. 91; Leclerc, no. 1424. Cf. *ibid.*, III, 26–27; Leclerc, no. 1206.

<sup>191</sup> *Amar, Production*, p. 226.

Maimonides refers to the beet as a cold and moist drug and a good food, especially when cooked.<sup>192</sup>

**TM:** The seeds of the beet plant, which were sold in the Land of Israel at the beginning of the 20th century by spice sellers for medical use, were the seeds of cultivated species. The same is true to Iran to the present day.<sup>193</sup> The leaves served to treat stings, wounds, skin rash, dandruff, putrescent wounds and ulcers, as well as the liver and spleen.<sup>194</sup> The Jews of Morocco use the plant to cure the intestines, to release obstructions in the urinary tract, and to dissolve kidney stones. The Jews of Tunis use it to strengthen the body and to treat anaemia and liver illnesses. The Jews of Iraq used the beet to treat skin peeling, dandruff, and hair loss (as do the Druze in the Golan Heights).<sup>195</sup>

**TAI:** Beet was considered food for poor people.<sup>196</sup>

## Berberry

Lebanon Berberry, *Berberis cretica* (Berberidaceae),<sup>197</sup> **A:** *barbārīs*, *amīrbārīs*<sup>198</sup>

**D&H:** Spiny bushes with simple leaves; the flowers have 6 pistils and the berries are fleshy. There are 450 species in the northern hemisphere. Medieval sources mention certain kinds: the *shāmī*, identified as *Berberis libanotica*; and the *ī* identified as *Berberis vulgaris*.<sup>199</sup>

**PU:** Berberry figures in 6 lists of *materia medica* (T-S Ar.35.328; T-S Ar.35.82; T-S AS 179.132; T-S AS 182.99; T-S NS 279.57; T-S Or.1081 J.71) and in 6 prescriptions: for the treatment of cough (T-S K25.116), and for unknown uses (seeds, T-S AS 148.27; T-S AS 179.283; plant, T-S Ar.30.305; T-S NS 327.97; sap, T-S Ar.42.110).

**TU:** Berberry features in several medical books and fragments: for treating the liver (dressing, T-S Ar.45.40); for hardness of the spleen, diseases of the liver and abdomen, and looseness of the bowels (T-S NS 306.4); weakness of the liver and bile corruption (T-S AS 172.7). It is also pres-

<sup>192</sup> Maimonides, Aphorisms, 2:4; 20:18; 21:74. Cf. Ibn Sina, p. 387.

<sup>193</sup> Crowfoot & Baldensperger, p. 102; Hooper, p. 91.

<sup>194</sup> Dafni, Edible, p. 92.

<sup>195</sup> Krispil, p. 826. Also in connection with the Jews of Iraq: Ben-Yakov.

<sup>196</sup> Gil, Kingdom, III, p. 74, no. 326.

<sup>197</sup> Description: Feinbrun-Dothan, p. 201; Zohary, p. 322.

<sup>198</sup> Issa, p. 30, nos. 17–18; Maimonides, Glossaire, no. 17.

<sup>199</sup> Amar, Ibn al-Baytar, p. 58.

ent as a simple in a lexicon of *materia medica* (T-S AS 177.407; T-S AS 180.32r) and in a recipe for unknown uses (T-S AS 179.328).<sup>200</sup>

**OMU:** Ibn al-Bayṭār describes the plant, giving several names and noting three species, ‘Andalusī’, ‘Rūmī’, and ‘Shāmī’, which are brought from the mountains of Beirut and Baalbek. Spice sellers in Egypt and the al-Shām region prefer the Shāmī kind.<sup>201</sup> al-Dimashqī states that the berberry grows on Mt. Lebanon and is one of the 90 useful drugs that one can gather for a livelihood.<sup>202</sup> Maimonides recommends the use of berberry (a cold and dry drug) on an empty stomach. He also reports that its seed is used as a component in a purgative.<sup>203</sup> According to Ibn al-Bayṭār the plant is a cold and dry drug that fortifies the liver and stomach. Since it has astringent qualities it is used to cause constipation and terminate thirst, and it is effective in cases of stomach infection; it is a recommended medication against jaundice. Its seeds dry intestinal ulcers, stop internal haemorrhages, and are used as a medication for diseases of the liver and stomach.<sup>204</sup>

**TM:** Various species of berberry across the world are used in making dye and jam, and for curative purposes.<sup>205</sup> In Iraq and Iran the common berberry (*Berberis vulgaris*) is used to make ointment to treat skin diseases and for general treatment.<sup>206</sup> The Jews of Iraq made extensive use of the plant to treat bleedings, heartburn, and skin diseases, and to stop vomiting.<sup>207</sup> Similar uses are practised in Europe.<sup>208</sup>

<sup>200</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>201</sup> Ibn al-Baytar, al-Jami, I, 55; Leclerc, no. 146; Ibn al-Baytar, Tafsir, pp. 140–141. Discussion on identification of the species in Amar, Ibn al-Baytar, p. 58, n. 29.

<sup>202</sup> al-Dimshqī, p. 199.

<sup>203</sup> Maimonides, Answers, no. 7; Maimonides, Regiment, 3:4; Maimonides, Aphorisms, 21:78.

<sup>204</sup> Ibn al-Baytar, al-Jami, I, p. 55; Leclerc, no. 146. Cf. al-Biruni, II, pp. 75–76.

<sup>205</sup> Uphof, p. 73.

<sup>206</sup> Hooper, p. 92.

<sup>207</sup> Ben-Yakov, pp. 122, 123, 128, 136, 139, 191, 280, 330, 351.

<sup>208</sup> Grieve, pp. 82–84.

## Black Spleenwort

*Asplenium onoperis* (Aspleniaceae),<sup>209</sup> **A:** *ashtūwān*<sup>210</sup>

**D&H:** A short perennial fern, with feathery leaves and long rhizome. In European TM it was believed effective against black bile, a belief whose memory endures in the scientific name. The plant *Trichomanes*, which was identified with *Asplenium trichomanes* (Galilean spleenwort), is described by Dioscorides, who also notes the name *Adiantum*.<sup>211</sup>

**PU:** Black spleenwort figures in 6 lists of *materia medica* (T-S NS 325.127; T-S Ar.39.450; T-S Ar.39.487; T-S AS 182.258; T-S AS 184.234; T-S NS 279.57) and in a prescription for unknown uses (T-S AS 177.31).

**TU:** None found to date.

**OMU:** al-Dimashqī mentions the plant and lists it among 90 species of plants used for medical purposes that grow on Mt. Lebanon and whose gathering can provide a livelihood.<sup>212</sup> The physician Assaf describes the 'Asplinion' and calls it 'the deer tongue'. According to him the plant is recommended to treat haemorrhoids and ailments of the intestines, and for urine flow.<sup>213</sup>

**TM:** In Iraq *Asplenium trichomanes* was used to treat chest diseases, and *Asplenium ruta-muraria* was taken as an expectorant.<sup>214</sup> In TM in Europe people used the plant to treat bile, spleen, melancholy, and hypochondria, and believed that this medication should not be given to women for fear it would cause infertility.<sup>215</sup>

## Borage

*Anchusa sp.* (*A. italica* and *A. officinalis*) (Boraginacea), **A:** *lisān al-thawr*, *lisān al-thawr al-shāmī*<sup>216</sup>

<sup>209</sup> Description: Plants & Animals, IX, p. 230.

<sup>210</sup> Ibn al-Baytar, Tafsir, p. 313, nos. 4–109; Issa, p. 24, no. 17; Grieve, p. 302. Discussion of identity in Amar, Ibn al-Boytar, p. 75, n. 77.

<sup>211</sup> Dioscorides, IV.137. Cf. Ibn al-Baytar, Tafsir, p. 313.

<sup>212</sup> al-Dimashqī, p. 199.

<sup>213</sup> Assaph, IV, 419.

<sup>214</sup> al-Rawī & Chaakravarty, p. 17. Cf. Grieve, p. 303.

<sup>215</sup> Plants & Animals, IX, p. 229. For uses, see Grieve, pp. 302–304. For uses of additional species, see Uphof, p. 56.

<sup>216</sup> Maimonides, Glossaire, p. 66, no. 211; p. 103, no. 376; Issa, p. 15, nos. 10, 12; Ibn al-Baytar, al-Jami, III, p. 69; Leclerc, no. 1344; Dinsmore & Dalman, nos. 1172–1179. For further information regarding identification see Amar, Ibn al-Baytar, p. 66, n. 50.

**D&H:** There are 50 species of borage, several of which grow in the Middle East. The plant's leaves are elongated and bristly; the flower has a corolla of joined petals and its colours vary from violet to white. The berry, containing four sections, functions as a disseminating unit.<sup>217</sup> The Arabic name, likens the rough leaf to a cow's tongue. The scientific name is derived from the Greek and is linked with the production of red dye. Presumably, this dye was produced from species that do not grow in this region.<sup>218</sup> Dioscorides describes the *anchousa*, and suggests using its leaves soaked in wine as an emetic and its leaves soaked in olive oil as a cure for growths on the skin and for burns.<sup>219</sup> The active materials have been studied in the modern period.<sup>220</sup>

**PU:** Borage figures in 7 lists of *materia medica* (T-S AS 179.132; T-S Ar.35.328; T-S Ar.39.487; T-S AS 179.56; T-S AS 184.234; T-S NS 224.62; T-S Ar.43.315) and in 17 prescriptions: for the treatment of hallucination (T-S 16.291) and weak eyesight and migraine, as written by Maimonides (T-S Ar.30.286). The Levantine (*shāmī*) kind was used to treat fever (T-S AS 155.277), in an invalid's diet (T-S Ar.42.189), as an aphrodisiac (T-S NS 164.159) and in recipes for unknown uses (T-S AS 183.216; T-S Ar.34.239; T-S Ar.40.141; T-S AS 155.365; T-S K25.212; T-S Or.1081.J.39; T-S Ar.30.227; T-S 12.33; T-S 13J6.14; water, T-S AS 182.242; the Levantine species, T-S Ar.30.65; T-S NS 305.75(76)).

**TU:** Borage is mentioned among other simples in medical books (T-S NS 305.75r) and in a quotation from Galen (T-S Ar.41.13).<sup>221</sup>

**OMU:** According to al-Isrā'īlī 'lisān al-thawr' was brought to Egypt from al-Shām (Syria) and from Turkey, and a liquid medicine was prepared from it.<sup>222</sup> Ibn al-Bayṭār writes in his entry 'Ḥamāḥim' that this is the 'lisān al-thawr' of the people living in al-Shām and the East.<sup>223</sup> According to Maimonides it was a light drug and an ingredient in an emetic as well as in other medicines including the 'great 'aṭrīfal.<sup>224</sup> Ibn al-Bayṭār in his entry 'shinjār' cites Galen as stating that the root of the plant is bitter, an astringent, cleanses the stomach, relieves pains of the kidney and spleen, and is applicable for internal use. Other physicians describe

<sup>217</sup> Plants & Animals, XI, p. 51.

<sup>218</sup> Ibid; see figure 17.

<sup>219</sup> Dioscorides, IV.23–25.

<sup>220</sup> Shalmovitz.

<sup>221</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>222</sup> al-Isrā'īlī, p. 282.

<sup>223</sup> Ibn al-Baytar, al-Jami, II, p. 34; Leclerc, no. 708.

<sup>224</sup> Maimonides, Aphorisms, 21:72; Maimonides, Regimen, 2:10; 3:4, 8, 9, 11.



external uses as dressing and disinfectant for wounds and reducing swellings. The root was used for various skin diseases but was also applicable for internal use, and was an effective medicine for the stomach.<sup>225</sup> Dāwud al-Anṭakī states in his entry 'lisān al-thawr' that the plant produced a drug for improving eyesight and the senses, easing the passage of excretions, and effective against madness and melancholy. It also relieved pains of the mouth, teeth, chest, lungs, and cured coughs and heartburn; it was used as a component in medicinal stimulants for fainting fits and to treat jaundice.<sup>226</sup> In Europe various types of borage were used to treat stomach ulcers, burns, worms, stomach pains, diarrhoea and high fever.<sup>227</sup>

**TAI:** One of the sources for borage was Damascus, as can be learnt from a letter sent by a merchant, Musa Ibn Ya'qūb, who was sent to the city to buy various substances. In the letter he asks his partner at Cairo for the price of borage before he makes the purchase.<sup>228</sup>

### Borax

[Natron] ( $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$ ), **A:** **bauraq, naṭrūn**

**D&H:** Inorganic material comprised of salt and soda, which was mined in the deserts of Egypt. Dioscorides describes extensive use of *Hales* (salt), *Halos anthos* (soda), and *Nitron* (natural soda).<sup>229</sup> 'Natron' is described by Hasselquist, who states that this salt was mined in Egypt, and was used for baking (instead of yeast), for washing fabrics and the body (instead of soap), and for treating toothache.<sup>230</sup>

**PU:** Borax figures in 4 lists of *materia medica* (T-S Ar.39.487; T-S Ar.43.317; T-S Ar.51.53; T-S Ar.42.15) and in 3 prescriptions: a depilatory for hairy women (T-S Ar.11.22) and for unknown uses (T-S AS 142.109; T-S AS 177.402).

**TU:** Borax is mentioned in medical books in recipes for stomach preparations and eye diseases (T-S Ar.40.90; T-S NS 306.48) and in a booklet of prescriptions (T-S Ar.40.64; T-S Ar.43.142). It served to treat convul-

<sup>225</sup> Ibn al-Baytar, al-Jami, III, p. 69; Leclerc, no. 1344. Cf. Ibn Sina, p. 435; al-Biruni, I, p. 361.

<sup>226</sup> al-Antaki, p. 281. Cf. Ibn Sina, p. 352; al-Biruni, I, p. 292.

<sup>227</sup> Grieve, p. 120; Dafni, Edible, p. 79.

<sup>228</sup> Gil, no. 514.

<sup>229</sup> Dioscorides, V, 126–130.

<sup>230</sup> Hasselquist, p. 275; al-Biruni, II, 80.

sion, fevers, and colic (T-S Ar.40.162), earaches, wounds, and women's diseases (T-S Ar.43.226; T-S Ar.45.21), as an aperient and as a linctus (T-S Ar.43.142); for children with umbilical hernia and incessant crying (T-S Ar.40.160). It features in chapter 55 of a medical text on preparing a dead body (injections with pith of colocynth: T-S NS 164.80); it was used for complaints in the joints of the upper and lower extremities (T-S AS 181.271), diseases affecting the legs and nails, sciatica, varicose veins, and phlebotomy (T-S NS 306.172); and to darken the hair (T-S NS 305.212). It also appears in general medical books (T-S Ar.40.61; T-S Ar.40.111; T-S Ar.42.68; T-S Ar.43.98; T-S Ar.44.91; T-S Ar.45.20; T-S NS 164.80; T-S NS 306.172) and a book on ophthalmology (T-S Ar.41.40; T-S Ar.43.270; T-S Ar.44.147), which was copied, according to Isaacs, with some variation from 'Alī b. 'Īsā's *Tadhkirat al-kaḥḥālīn* [ed. Hyderabad, p.347] (T-S NS 306.48r). It was used in dentistry (T-S Ar.42.39), dermatology (T-S NS 90.66), and as a poison (T-S Ar.44.77). It also appears in pharmacopoeias (T-S Ar.44.193; T-S Ar.44.212; T-S Ar.45.19; T-S NS 222.43; T-S NS 222.67; T-S AS 177.456; T-S AS 181.271; T-S Or.1081.1.6; T-S NS 305.212; T-S AS 179.123), in QM (T-S Ar.40.115; T-S Ar.44.4; T-S Ar.39.351; T-S Ar.39.369), in books of *materia medica* (T-S Ar.39.242; T-S Ar.39.273; T-S Ar.39.351; T-S NS 306.94), and in other fragments (T-S Ar.38.124; T-S Ar.43.52; T-S NS 297.39; T-S NS 222.35). Armenian borax is mentioned in a recipe for the treatment of various eye complaints, such as weak and dim vision and drooping eyelids (T-S Ar.41.40).<sup>231</sup>

**OMU:** al-Bīrūnī recommends borax only for external use, and warns of its toxicity.<sup>232</sup> al-Qazwīnī, in his entry 'ḥajar al-milh', writes that salt contains a cure for seventy diseases. It prevents mould, clears the teeth of decay, removes excess skin, and cures skin diseases. Salt is also used as a component in medications against the stings of scorpions, bees, and centipedes, and served in the treatment of joint infections. 'Andrānī salt' strengthens a weak jaw and the mind.<sup>233</sup> Similar medical uses are also attributed to other types of salt such as 'natron'.<sup>234</sup>

<sup>231</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>232</sup> al-Bīrūnī, II, p. 80.

<sup>233</sup> al-Qazwīnī, p. 210. Cf. al-Antakī, pp. 323–324; Ibn al-Baytar, al-Jamī, IV, p. 166; Leclerc, no. 2168.

<sup>234</sup> al-Qazwīnī, pp. 187–188, 210. Cf. al-Antakī, p. 324; Ibn al-Baytar, al-Jamī, IV, p. 166; Leclerc, nos. 2165–2170.

**TAI:** Borax was exported from Egypt to various locations, including Baghdad; it was sold and traded at Cairo, Alexandria, Mahdiyya, and Qayrawān.<sup>235</sup> It was also one of the products that were exported to Palermo in Sicily.<sup>236</sup> One of the leading 11th-century wholesale merchants who dealt in borax was Nahray ben Nissim.<sup>237</sup> It was also used in industry.<sup>238</sup>

### Bottle gourd

*Lagenaria vulgaris* (Cucurbitaceae), **A:** yaqṭīn, qar<sup>6</sup>

**D&H:** Garden vegetable, annual, climber with divided leaves, white flower, long fruits which were eaten in the past; the rind was used for household utensils, tools and instruments (see figure 16).

**PU:** Bottle gourd figures in 5 lists of *materia medica* (T-S Ar.35.229 [3]; T-S Ar.39.136; T-S Ar.39.139; T-S AS 184.234; T-S NS 305.136; seeds, T-S NS 164.12) and in 7 prescriptions: for fever (peel, T-S AS 155.277), cough (T-S 8J15.20), and as plaster (T-S NS 222.34), and unknown uses (T-S AS 177.39; seeds, T-S AS 162.186; T-S AS 177.31).

**TU:** Bottle gourd is mentioned in medical books (T-S Ar.41.137; T-S Ar.41.101; T-S Ar.45.45; T-S AS 179.273) and books on ophthalmology (T-S Ar.43.76; T-S AS 180.6), dermatology (T-S NS 90.60), fevers (T-S Ar.44.57), and dentistry (T-S Ar.42.44); in lexica of *materia medica* (T-S Ar.35.89, T-S Ar.42.73; T-S Or.1080.2.74; T-S AS 159.67; T-S AS 177.39) and pharmacopoeias (T-S Ar.11.13 [preparing lozenges]; T-S Ar.44.37; T-S Ar.44.205; T-S Or.1080.3.39), in prescriptions for liver weakness, bile corruption (T-S AS 172.7), and unknown uses (T-S AS 162.185). It is also mentioned in a quasi-medical fragment (T-S Ar.11.17), and other fragments (T-S Ar.38.68; T-S NS 297.104).<sup>239</sup>

**OMU:** Ibn Sīnā writes that the plant is beneficial mainly for treating ear-ache, fever, headaches, sore throat, cough and tooth-ache.<sup>240</sup> al-Anṭākī reports on the use of the plant for the treatment of fevers, headache, eye inflammation, and kidney diseases, and as a diuretic.<sup>241</sup>

<sup>235</sup> See, e.g., Gil, Kingdom, III, p. 23, no. 310; p. 572, no. 472.

<sup>236</sup> Gil, Kingdom, I, p. 564 and see indices.

<sup>237</sup> Goitein, Society, I, p. 154; IV, p. 174.

<sup>238</sup> Ibid., IV, p. 174.

<sup>239</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>240</sup> Ibn Sina, I, pp. 424–425, compare Ibn al-Baytar, al-Jami, IV, pp. 9–11.

<sup>241</sup> al-Antaki, p. 230.

**Box-thorn**

*Lycium afrum* = *Rhamnus infectoria*<sup>242</sup> (Solanaceae), **A:** **khawlān**, ‘awsaj

**D&H:** Evergreen spiny tangled bush, one of 100 species of its genus in the world. The plant bears small black rounded fruit. Dioscorides describes the plant and its medical uses: mainly various eye diseases, colic, dysentery and cough.<sup>243</sup>

**PU:** Box-thorn features in 7 lists of *materia medica* (T-S Ar.30.274; T-S Ar.35.344; T-S Ar.35.366; T-S Ar.43.317; T-S Ar.43.315; T-S NS 279.57; Indian kind, T-S NS 321.49) and in 2 prescriptions: for the treatment of eye diseases (T-S Ar.44.162) and a linctus for cough (T-S AS 148.22).

**TU:** Different species of lycium are mentioned in medical books, mainly to treat eye complaints: redness, itching, excessive lachrymation, weakness and dimness of vision, and drooping eyelids (T-S Ar.39.228; T-S Ar.41.40; T-S Ar.41.45; T-S NS 164.98r; T-S Ar.38.9; T-S Ar.38.37; T-S Ar.38.124; T-S Ar.43.52; T-S Ar.43.101; T-S AS 182.102).<sup>244</sup>

**OMU:** Ibn Sinā states that it dyes the hair red, and cures gum diseases, eye ailments, coughs, spleen diseases, and diarrhoea.<sup>245</sup> Ibn al-Bayṭār prescribes box-thorn for skin diseases, swellings, gum diseases, eye diseases, sore throat, cough, dog bites, and spleen diseases, and cites early sources for treatment of hair problems, bleeding, and dog bites.<sup>246</sup> al-Anṭākī reports uses such as stopping bleeding, diarrhoea, spleen diseases, dog bites, and eye diseases.<sup>247</sup>

**TAI:** Mentioned in letters of merchants connected to Alexandria, Cairo, Mahdiyya, Qayrawān, and Tyre; it was exported from Egypt to Mazara and Palermo in Sicily.<sup>248</sup>

<sup>242</sup> Issa, p. 112, no. 15.

<sup>243</sup> Dioscorides, I, no. 132.

<sup>244</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>245</sup> Ibn Sina, I, pp. 312–313.

<sup>246</sup> Ibn al-Bayṭār, al-Jami, II, pp. 24–25.

<sup>247</sup> al-Antaki, p. 112.

<sup>248</sup> Gil, Kingdom, II, p. 742, no. 251; III, p. 197, no. 354; p. 250, no. 373.

## Cadmium

Cadmia, (Cd), **A:** *iqḷimiyā, aqlīmiyā, qadmiyā, qalimīya*<sup>249</sup>

**D&H:** Cadmium is a by-product of the process of refining zinc. It is found in nature in zinc ore.<sup>250</sup> Cadmium is described by Maimonides as ‘waste of the blending elements.’<sup>251</sup>

**PU:** Cadmium appears in one list of *materia medica* (T-S NS 305.69) and different kinds are mentioned in 10 prescriptions, of which one was for unknown uses (T-S NS 297.17) and the rest for the treatment of eye diseases (T-S AS 161.23; T-S Ar.44.162 [2]; T-S AS 161.23; T-S Ar.44.162 [2]; golden [*iqḷimīya al-dhahab*], T-S AS 153.89; T-S AS 153.89; yellow [*iqḷamiyā ašfar*], T-S Ar.42.60; T-S Ar.42.60; [*iqḷamiyā fiḍḍa*], T-S Ar.42.60).

**TU:** Cadmium features in medical books in prescriptions for excessive lachrymation, growing eyelashes, loosening of teeth, and as a collyrium (T-S NS 90.28; T-S NS 306.73; T-S AS 153.189). It also appears in general medical books (T-S Ar.43.265), books on ophthalmology (T-S Ar.40.145; T-S Ar.41.24; T-S Ar.41.40 [weakness and dimness of vision and drooping eyelids]; T-S Ar.42.5 [excessive lachrymation]; T-S Ar.42.21; T-S Ar.42.144; T-S Ar.43.101; T-S Ar.43.166; T-S NS 222.18; T-S NS 222.38; T-S AS 144.79; T-S AS 179.59; T-S AS 183.201), in pharmacopoeias (T-S Ar.43.231), in QM (T-S Ar.41.115), and in other fragments (T-S Ar.38.124; T-S Ar.39.472; T-S Ar.43.145).<sup>252</sup>

**OMU:** The main medical use of cadmium, according to medieval medical authorities such as Maimonides,<sup>253</sup> who cites al-Tamīmī,<sup>254</sup> is treating eye diseases, mainly inflammation. Al-Qazwīnī, however, asserts that it is used for skin diseases, suppurative wounds, and pain in the eye.<sup>255</sup>

**TAI:** Cadmium (golden as well as mercurial) were among the materials brought in to Cairo for Makhluḥ Ben Isaac.<sup>256</sup>

<sup>249</sup> Maimonides, Glossaire, no. 342, 382.

<sup>250</sup> Dietrich, Egypt, pp. 34–36; Stapleton, p. 56.

<sup>251</sup> Maimonides, Glossaire, no. 342.

<sup>252</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>253</sup> Maimonides, Aphorisms, IX, 30, p. 130.

<sup>254</sup> Amar & Seri, p. 42.

<sup>255</sup> al-Qazwīnī, p. 137.

<sup>256</sup> Gil, Kingdom, II, p. 676, no. 231, Dietrich, Egypt.

## Camphor

*Cinnamomum camphora* (Lauraceae), **A: kāfūr**

**D&H:** Tall tropical evergreen tree (up to 30 m), dark leaves, yellow-green flowers, and small black fruit. Oil produced from the tree was used for medicine.<sup>257</sup> The cultivation of the tree, production of its oil, and its medical use were widespread in early times in China and Japan. The tree and its products were apparently not known to the physicians and scientists of ancient Greece and Rome. Camphor became widely distributed around the world and was known in the Middle East from the Sassanid period when it served as a perfume and a condiment. The Arabs discovered the tree and its uses during their conquest of the East (in 637). It was known in ancient Arab culture because it is mentioned in the Qur'ān and by early Arab poets who include it in their poems together with musk. The tree, the production of the substance, its preservation, and its trade are described by chroniclers, geographers, and travellers. Some describe the tree, which grows mainly on the banks of streams, reaches a great height, and spreads wide. The full-grown tree used to be incised at a certain season for collecting its resin, and the tree died at the end of the process.<sup>258</sup> The researcher Riddle claims that the medicine was discovered only during the Middle Ages.<sup>259</sup>

**PU:** Camphor figures in 13 lists of *materia medica* (T-S Ar.30.274; T-S Ar.34.341; T-S Ar.35.229; T-S Ar.39.450; T-S Ar.43.6; T-S Ar.43.317; T-S AS 177.9; T-S AS 184.234; T-S NS 321.49; root, T-S Ar.35.252; T-S Ar.43.317; T-S AS 184.234; T-S Ar.30.274) and in 7 prescriptions: for eye diseases (T-S NS 218.21), swellings (T-S NS 194.70), to stop bleeding (T-S NS 139.31), and for unknown uses (T-S Ar.43.338; T-S AS 182.167); one of these is a compound (T-S AS 177.40) and other a camphoric mixture (T-S NS 306.33).

**TU:** Camphor appears in several medical books in prescriptions to treat: septic conditions near the ear (ointment, T-S NS 164.62r), dying the hair black (T-S Ar.40.121), jaundice with acute fever and palpitation (T-S NS 305.116), trachoma and ulcers (T-S AS 183.201). It is mentioned in a recipe taken, according to Isaacs, from al-Kindī's *Kitāb kimiyyā al-'itr* (The book of the chemistry of perfume) (T-S Ar.41.29) and is found in a quasi-medical prescription for pains and swellings (T-S Ar.40.149). It also appears as a simple in a lexicon of *materia medica* (T-S Ar.35.229;

<sup>257</sup> Chevallier, p. 188; see figure 18.

<sup>258</sup> *EI*, V, p. 417; Morton, p. 103.

<sup>259</sup> Riddle, Research, p. 13.

T-S Ar.43.132; T-S AS 160.197; T-S AS 182.303), in a prescription for unknown uses (T-S Ar.41.90; T-S AS 179.329;), and in a drug preparation (T-S Ar.40.57).<sup>260</sup>

**OMU:** al-Kindī uses camphor to prepare a dressing for the liver and the spleen, to treat a sore throat, and to prepare medications for the eyes and a toothpaste.<sup>261</sup> According to Maimonides, this is a cold and dry drug, and it was an ingredient in a medication for ‘sleep and slumber.’<sup>262</sup> Ibn al-Bayṭār lists the medical uses of camphor as recommended by Arab physicians, for example, treating headaches, fevers, chilled kidneys and testicles; it is an ingredient in ointments to treat putrescent wounds, curing kidney diseases, and dissolving stones in the urinary bladder.<sup>263</sup> Liquid camphor is described, as is its medical use.<sup>264</sup> According to Ibn Masawayh, camphor is one of the five most important aromatic substances, and that only a few types exist.<sup>265</sup>

**TM:** The tree serves to produce celluloid, the wood is used in the furniture industry in Japan and China, and the ethereal oils also serve in the cosmetics and medicinal industries.<sup>266</sup> In India, camphor is used to treat joint infections, sprains, malaria, and typhoid.<sup>267</sup> The Jews of Iraq used the plant to treat skin diseases and typhoid, and to prevent pregnancy.<sup>268</sup> In England and in Europe the substance was widely used as a disinfectant, to soothe, and to treat joint infections.<sup>269</sup>

**TAI:** Camphor and camphor water were commodities traded in between Egypt, Sicily and the Maghreb; it was imported from China by Jewish merchants.<sup>270</sup> In a Genizah letter (11th cent.) Habib ben Nissim of Ramlah describes the difficult journey from Alexandria and relates that on the way he lost the camphor he had bought in Egypt. Camphor is mentioned in connection with the cities and ports of Alexandria, Cairo, Qayrawān, Mahdiyya, Palermo, and Tripoli.<sup>271</sup> In the 13th century camphor was

<sup>260</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>261</sup> al-Kindi, nos. 11, 24, 61, 77, 89, 91, 104, 152; Ibn Sina, pp. 336–337.

<sup>262</sup> Maimonides, Aphorisms, 21:83; Maimonides, Sexual, 18:1, 2, 4.

<sup>263</sup> Ibn al-Baytar, al-Jami, IV, pp. 42–44; Leclerc, no. 1868. Cf. al-Antaki, p. 235.

<sup>264</sup> Ibn al-Baytar, al-Jami, IV, 136; Leclerc, no. 2070.

<sup>265</sup> In detail: Levey, Ibn Masawayh, p. 402. A summary of the plant and its medical uses in Arabic literature is in *EL*, V, p. 417.

<sup>266</sup> Uphof, p. 130; Zohary, p. 309.

<sup>267</sup> al-Kindi, p. 321.

<sup>268</sup> Ben-Yakov, pp. 112, 140, 263, 264, 267.

<sup>269</sup> Grieve, pp. 155–156.

<sup>270</sup> Gil, I, pp. 615, 622.

<sup>271</sup> Goitein, Society, I, pp. 154–5; IV, p. 176; Gil, Kingdom, IV, p. 930, see indices for 27 fragments; Gil, I, p. 565, II, p. 519, no. 292.

merchandise transported across the Levant en route to Europe.<sup>272</sup> In a list of customs dues in Acre, camphor (*cafor*) and camphor roots appear listed as merchandise subject to customs duties.<sup>273</sup>

### Cardamom

Malabar Cardamom, Lesser Cardamom, *Elettaria cardamomum* (Zingiberaceae), **A:** **hāl**,<sup>274</sup> **kākālī**<sup>275</sup>

**D&H:**<sup>276</sup> Tall (up to 5 metres) perennial with mauve-marked, white flowers and very long lance shaped leaves.<sup>277</sup> In ancient Egypt the seeds were used for curative purposes and were chewed to keep the teeth white. Cardamom is one of the plant species mentioned in the Ebers Papyrus (1550 BCE) in ancient Egypt in connections with medical uses. For the Romans, cardamom seed was a condiment and aided digestion.<sup>278</sup> Pliny mentions the medical use of the plant and Dioscorides also describes *Kardamomon*, listing its medical uses such as curing thigh pains, paralysis, and spasms, and bites and stings of living creatures. It was also used to abort foetuses.<sup>279</sup>

**PU:** Cardamom figures in 7 lists of *materia medica* (T-S Ar.30.274; T-S Ar.35.252; T-S Ar.39.450; T-S AS 176.151[2]; T-S AS 184.234; T-S AS 184.34; T-S NS 306.106) and in 6 prescriptions: for fevers (T-S NS 306.177) and unknown uses (T-S Ar.30.65; T-S Ar.30.291; T-S Ar.35.59; T-S Ar.43.338; T-S NS 306.100).

**TU:** Cardamom is mentioned as simple in a medical book's prescriptions for the treatment of colic and coughs (pills, T-S NS 90.61). It is also in lexica of *materia medica* (T-S Ar.35.252; T-S AS 182.242v) and in one prescription for unknown purposes extracted, according to Isaacs, from al-Kindī's *Kitāb kīmiyā al-ʿiṭr* [The book of the chemistry of perfume]

<sup>272</sup> Venice Laws, IV, 285. Translation and explanation in: Prawer, Colonial, p. 480.

<sup>273</sup> Beugnot, II, 173.

<sup>274</sup> Identification and additional names in Maimonides, Glossaire, no. 116; Issa, p. 75, no. 25; Leclerc, nos. 1355, 1722, 1783, 2247, 2268. Cf. al-Antaki, pp. 254–255, 334, 338.

<sup>275</sup> Other identification option of kākālī or kākala could be Saltbush [Sea orach] *Atriplex halinyus* (Chenopodiaceae) see Maimonides, Glossaire, nos. 325, 331; Issa, p. 27, no. 13; Dinsmore & Dalman, no. 1479; Leclerc, no. 1811.

<sup>276</sup> See its fruits, figure 19.

<sup>277</sup> Chevallier, p. 91, Loewenfeld & Back, p. 87; Hill, p. 458.

<sup>278</sup> Loewenfeld & Back, p. 86.

<sup>279</sup> Dioscorides, I.5.



(T-S Ar.41.29), and in another taken from Ibn Sīnā's *al-Qānūn* (cf. ed. Bulaq, III:302–3; T-S Ar.41.96).<sup>280</sup>

**OMU:** The physician Assaf states that cardamom dissolves kidney stones, cures paralysis of the limbs, cough, stomachache, tuberculosis, malaria, and skin diseases. It also acts to eliminate intestinal worms, to cure bites and stings, and to abort foetuses.<sup>281</sup> al-Kindī describes its use 'in compound medications to improve well being, to treat the teeth, to eliminate bad odours from the mouth, to strengthen respiration, and to treat stomach pains'.<sup>282</sup> According to al-Bīrūnī and Ibn Māsawayh, it is an aromatic medicine for the stomach.<sup>283</sup> Maimonides includes the plant among the components of the medication called 'the great aṭṛīfal', which serves as a body tonic and for virility.<sup>284</sup> In a medical responsum that he wrote for the Vizier al-Afdal (son of Saladin), Maimonides describes the use of cardamom to prepare a compound medication to treat the "royal disease".<sup>285</sup> The 'small cardamom' is listed among the hot and dry drugs.<sup>286</sup>

**TM:** Yemenite Jews used the cardamom to stimulate appetite, to regulate bowel movements, and to treat nausea, vomiting, and kidney stones. It also served as a component in a medication to treat insanity, depression, cough, phlegm secretion, tuberculosis, and eye infection, and to prepare dressings to treat mumps.<sup>287</sup> In Egypt cardamom is still sold in the markets and is used as a condiment, a stimulant, a carminative, and to help in treating stomach problems.<sup>288</sup> The Jews of Iraq used the seeds to spice tea, coffee, and curry, to reduce flatulence and to prevent bad breath.<sup>289</sup>

**TAI:** Cardamom was traded according to Genizah fragments from Egypt (Cairo and Alexandria) to Qayrawān, Mahdiyya, Mazara, and Sicily.<sup>290</sup> It is listed among the merchandise exported from Syria to Europe in the 13th century,<sup>291</sup> probably through the city of Acre because *cardemoine* is mentioned there as being subject to customs duties.<sup>292</sup>

<sup>280</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>281</sup> Assaph, IV, 391. Cf. Ibn Sina, p. 417.

<sup>282</sup> al-Kindi, nos. 3, 106, 206, 213, 225.

<sup>283</sup> al-Biruni, I, 328; Levey, Ibn Masawayh, p. 406.

<sup>284</sup> Maimonides, Regimen, 3:11. Compare al-Biruni, I, 266.

<sup>285</sup> Maimonides, Answers, 19:4.

<sup>286</sup> Maimonides, Aphorisms, 9:88.

<sup>287</sup> Reiani, no. 43.

<sup>288</sup> al-Kindi, p. 342, no. 313.

<sup>289</sup> Ben-Yakov, p. 479.

<sup>290</sup> Gil, Kingdom: III, p. 252, no. 373, p. 865, no. 562, IV, p. 588, no. 794 and see indices; Goitein, Society, I, p. 585; II, p. 270.

<sup>291</sup> Venice Laws, p. 285; Prawer, Colonial, p. 480.

<sup>292</sup> Beugnot, II, 175.

## Carrot

(Apiaceae) [wild and cultivated species], **A:**

*Daucus carota* (Apiaceae), **A: jazar, dawqū, aṣṭūfūlīn**<sup>293</sup>

**D&H:** The carrot is a widely cultivated vegetable plant (height 60–90 cm.), with branching stems, feathery leaves, and an edible, firm and fleshy root. The carrot was an ancient agricultural crop in India, Asia Minor, and even Switzerland. It is not mentioned in the Bible, the Mishna or by the Jewish Sages under this name, but the Jerusalem Talmud refers to the ‘astafnini’ (Demai, 2:1; Ma’asarot, 2:4). The colour of the vegetable root (the edible part) used to be purple. The orange coloured species known today was cultivated in Holland during the 18th century.<sup>294</sup> Classical physicians describe the carrot *Staphulinos* and note its medicinal uses.<sup>295</sup>

**PU:** A few kinds of carrot figure in 3 lists of *materia medica* (T-S AS 177.227; T-S AS 182.73; T-S Ar.43.317) and in 3 prescriptions: the wild species<sup>296</sup> in linctus for cough (T-S AS 148.22) and seeds of regular carrot for unknown uses (T-S AS 155.365; T-S AS 173.3).

**TU:** Carrot is mentioned in medical books’ prescriptions for palpitation, eye complaints, theriac, purgatives (T-S Ar.42.199; T-S Ar.45.33), and for unknown uses (T-S AS 177.3). It is also present in general medical books (T-S NS 90.80), books on sex (T-S Ar.44.79), *materia medica* (T-S Ar.44.204; T-S Ar.44.76; T-S Ar.44.73; T-S Ar.44.204), pharmacopoeias (T-S Ar.11.32; T-S Ar.41.114; T-S Ar.44.205; T-S AS 176.400; T-S AS 176.401; T-S NS 306.54) and other fragments (T-S NS 297.104; T-S NS 297.114; T-S AS 181.40; T-S Or.1080.13.12; T-S Or.1080.14.47).<sup>297</sup>

**OMU:** The physician Assaf describes the use of ‘a weed called “daucos”’ which has sweet roots and is used in opening obstructions in the urinary tract, for kidney pains, cough, and for snake bites, and those who have blood in their urine or vomit blood.<sup>298</sup> al-Kindī maintains that carrot seeds relieve stomach disorders, dissolve stones in the kidneys and the urinary tract, and cures sexual addictions. According to him, the ‘dawkaws’ (wild carrot) is used for treating haemorrhoids.<sup>299</sup> al-Tamīmī

<sup>293</sup> Issa, p. 69, no. 4; Amar & Seri, pp. 131–132.

<sup>294</sup> Plants & Animals, XII, pp. 78–79; see figure 20; Low, III, p. 449; Feliks, Yerushalmi.

<sup>295</sup> Dioscorides, III.59.

<sup>296</sup> Amar & Seri, p. 132.

<sup>297</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>298</sup> Assaph, IV, 409.

<sup>299</sup> al-Kindī, nos. 207, 221, 226.

mentions the ‘dawkaw’, which can be identified with a cultivated subspecies of the carrot, *Daucas carota*, as one of the vegetable plants that grew in the Jerusalem area. Among its main virtues listed by al-Tamīmī is its beneficial effect against the bites of snakes and scorpions.<sup>300</sup> Ibn al-Bayṭār calls it ‘dawkaws’ and notes that one of its varieties is well known in al-Shām and Bayt al-Maqdis (Jerusalem).<sup>301</sup> In his entry ‘iṣṭafālīn’ Ibn al-Bayṭār states that this is the word for the ‘jazar’ (carrot) in the al-Shām dialect.<sup>302</sup> In his entry ‘dawkaws’ he cites classical and contemporary physicians in describing its medicinal value. Examples are: for urine flow, as an emmenagogue, to reduce stomach pains and cough, to treat scorpion stings, and to prevent lustful desires.<sup>303</sup> Maimonides reports that the carrot seed called ‘fishtanga’ was one of the many components in a medication called ‘the great aṭrīfal’ which is used for strengthening the organs, especially the heart, to delay old age, to strengthen the senses, and improve coitus. The carrot is listed among the hot and dry drugs.<sup>304</sup>

**TM:** In Iraq, Egypt, and Iran the carrot is used as stimulant, carminative, purgative, diuretic, and emmenagogue, and to arouse sexual desire and soothe the skin.<sup>305</sup>

## Cassia

*Cassia* (*Senna*) sp. especially: *Cassia acutifolia* (Fabaceae),<sup>306</sup> **A:** **sanā, sanā makki**

Main species: True Senna (*Cassia acutifolia* = *Senna alexandrina*), Senna (*Cassia obtusifolia* = *Senna obtusifolia*), Senna (*Cassia italica* = *Senna italica*), Indian Senna (*Cassia angustifolia* = *Senna tinnevelly*)

**D&H:** Cassia, also called senna, is an annual or herbaceous perennial plant, shrub, or tree of the genus *Cassia*. There are about 400 species, mostly tropical, although a few are found in temperate regions. Many are popular ornamentals because of their rapid growth, pinnate leaves,

<sup>300</sup> Amar & Seri, p. 18; al-Tamimi, pp. 21b–22a.

<sup>301</sup> Ibn al-Baytar, al-Jami, II, p. 119; Leclerc, no. 970.

<sup>302</sup> Ibn al-Baytar, al-Jami, I, p. 39; Leclerc, no. 96; al-Antaki, p. 50.

<sup>303</sup> Ibn al-Baytar, al-Jami, II, p. 119; Leclerc, no. 970.

<sup>304</sup> Maimonides, Regimen, 3:11; Maimonides, Aphorisms, 21:80. Cf. al-Ghafiqi, no. 207.

<sup>305</sup> Ducros, p. 21; Hooper, p. 112; al-Rawi & Chaakravarty, pp. 36–37 where the contents of active substances are given. See also: Ben-Yakov, p. 326.

<sup>306</sup> Feinbrun-Dothan, pp. 294–295; Morton, pp. 147–152.

and yellow or rose flowers, which often grow in large clusters. The fruit is a pod. Various types of cassia are used as remedies in the Near and Far East.<sup>307</sup> Senna, the dried leaves of many species, provides an extract used as a cathartic.<sup>308</sup> Its uses as a medicinal plant began in the 9th or 10th century.

**PU:** Two kinds of cassia figure in 5 lists of *materia medica* (*sanā*, T-S Ar.39.139; T-S AS 169.199; T-S NS 305.69; T-S Ar.39.450; T-S Ar.39.487) and in 13 prescriptions: for fever (*sanā makkī*, T-S AS 155.277), as an aphrodisiac (T-S NS 164.159), and for unknown uses (*sanā makkī*, T-S AS 182.179; T-S Ar.34.150; T-S Ar.34.239; T-S Ar.40.141; T-S AS 179.283; T-S AS 216.200; T-S NS 305.76(75); *sanā*, T-S AS 148.27; T-S AS 182.167; T-S AS 183.216; T-S AS 155.365).

**TU:** Cassia (senna) appears in medical books' recipes for unknown uses (T-S AS 182.216r), for the treatment of stones in the bladder (T-S K14.18; T-S K14.5)<sup>309</sup> and in a prescription which was translated by Goitein (T-S Ar.30.65v).<sup>310</sup>

**OMU:** According to the physician Assaf, Indian Senna is a cathartic drug and a remedy for the eyes and for women's illnesses.<sup>311</sup> al-Kindī states that Meccan senna is a component in a medicine from which infusion is prepared.<sup>312</sup> Maimonides lists many uses for senna, mainly as a remedy for the intestines. The 'sini' is a hot and dry drug.<sup>313</sup> Ibn al-Bayṭār, quoting other sources, says that senna is a medicine well known among the dwellers of the Hijāz and is used to cure epilepsy and to treat smallpox, and as a purgative.<sup>314</sup> A legal document dated 1711 says that senna leaves were used in Jerusalem for medical purposes.<sup>315</sup> In this case, an Arab gave his pregnant wife some senna leaves, contrary to the instructions of the physician, Salmān ben ha-Yehudi. This medicine was mistakenly administered instead of chicory or yellow pond-lily juice and it caused the miscarriage of the child and the death of the woman.

<sup>307</sup> According to Maimonides, Glossaire, p. 77, no. 267; Issa, p. 42, nos. 9–10; Dinsmore & Dalman, no. 649.

<sup>308</sup> Grieve, p. 168, 734–737.

<sup>309</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>310</sup> Goitein, Society, II, p. 267.

<sup>311</sup> Assaph, IV, 401.

<sup>312</sup> al-Kindī, no. 211.

<sup>313</sup> For example: Maimonides, Regimen, 3:9; Maimonides, Aphorisms, 20:49; 21:69.

<sup>314</sup> Ibn al-Baytar, al-Jami, III, p. 32; Leclerc, no. 1236. Cf. al-Antakī, no. 201.

<sup>315</sup> Cohen, 18 Century, p. 325, no. 279.

**TAI:** Senna was brought to Europe by Muslim physicians and was used throughout the Middle East and Europe as a cathartic substance.<sup>316</sup> Frederick Hasselquist reported that Egyptian farmers collected this plant and sold it to Jewish licensed dealers who exported it to Europe, mainly to Marseilles and Venice, for medicinal use.<sup>317</sup> Senna was imported into Palermo (Sicily) and Qayrawān (North Africa) from Cairo.<sup>318</sup>

### Cassia, purging

*Cassia fistula* (Fabaceae), **A:** ḥiyyār shanbar, khiyyār shanbar<sup>319</sup>

**D&H:** Tall tree, native to tropical Africa and India. The egg-like leaflets are paired in the leaf structure, and inflorescence consists of yellow flowers. The fruit is long (up to 50 cm) and pipe-like. Ripe fruit is blackish, the flesh is sweet and smells like a carob. It is first mentioned in Hebrew medical literature by the physician Assaf.<sup>320</sup>

**PU:** Purging cassia figures in 3 lists of *materia medica* (T-S Ar.35.137; T-S AS 169.199; T-S Ar.43.315) and in 8 prescriptions: for diet (T-S Ar.41.71), as an aphrodisiac (T-S NS 164.159), plaster (T-S NS 222.34), and for unknown uses (T-S AS 179.283; T-S AS 216.200; T-S Ar.34.239; T-S 12.33; falūs, T-S Ar.40.141).

**TU:** Purging cassia is mentioned in several Genizah fragments of medical books (T-S Ar.41.61).<sup>321</sup>

**TU:** The physician Assaf mistakenly identified the plant with 'keziot', which is listed in the Talmud among the spices for incense. It grows in Yemen and in Ethiopia, and it is of a hot and dry quality. The best is the red one, and it has the scent of old wine.<sup>322</sup> al-Bīrūnī describes the different varieties of the purging cassia and discusses their qualities.<sup>323</sup> Ibn al-Bayṭār cites Abū al-ʿAbbās al-Nabaṭī, who describes the plant, as well as other physicians, who reported on the use of the peel for curative purposes. Noted among the medical uses are the cleansing of internal organs, reducing swellings, soothing nerves, curing throat sores, and

<sup>316</sup> al-Kindi, p. 286.

<sup>317</sup> Hasselquist, p. 300.

<sup>318</sup> Gil, Kingdom, I, p. 564; III, p. 864, no. 562; p. 903, no. 574; p. 575, no. 575.

<sup>319</sup> Issa, p. 42, no. 12.

<sup>320</sup> Assaph, IV, 394.

<sup>321</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>322</sup> Assaph, IV, 394.

<sup>323</sup> al-Biruni, I, 140–141.

mainly causing diarrhoea.<sup>324</sup> According to Maimonides too, it is a mild and safe purgative.<sup>325</sup> Elsewhere he cites al-Tamīmī, who states that the fruit counteracts the poison of snakes and scorpions, and strengthened the womb of pregnant women.<sup>326</sup> Saladino d'Ascoli lists the purging cassia among the varieties of fruits that serve for curative purposes and that can be kept for only one year.<sup>327</sup>

**TM:** The fruit of the purging cassia was used in tropical Asia as a purgative drug.<sup>328</sup> In Iraq it served as a component in a preparation against heartburn.<sup>329</sup> Yemenite Jews used the flowers and fruit of the purging cassia to regulate bowel movement, to cause diarrhoea, and to cure jaundice. The fruit was used to treat swellings and colds, to cleanse the blood, to reduce fever, and to regulate the activities of the gall-bladder and the liver, and respiration.<sup>330</sup>

**TAI:** In a letter from the Genizah (11th cent.) a Jerusalem merchant (Eli ha-Kohen ben Yehezkel) reports to his family in Egypt on the sale of a crate of purging cassia from Ramlah.<sup>331</sup> Ibn al-Khayr al-Ishbīlī writes in his book that it grows in India and in the al-Shām region, and he lists its main uses.<sup>332</sup> Ibn al-Bayṭār quotes the description of the fruit by Abū al-'Abbās al-Nabaṭī (who visited the Levant in about 1216): 'A well known tree and its fruits are known in Egypt and in Alexandria from where they are borne to a-Shām.'<sup>333</sup> Several merchants' letters found in the Genizah describe the trade in purging cassia in Cairo, Jerusalem, and Mahdiyya.<sup>334</sup> In a guidebook for merchants written by the Italian Pegolotti (1340), the *Cassia fistula* is mentioned, including its sale in the city of Acre under Crusader rule (until 1291).<sup>335</sup> Many sources, including the Genizah, give an account of the trade in the fruit of the purging

<sup>324</sup> Ibn al-Baytar, al-Jami, II, 81; Leclerc, no. 836; al-Antaki, pp. 148–149. Cf. Ibn Sina, p. 457.

<sup>325</sup> Maimonides, Asthma, 12:8; Maimonides, Regimen, 2:11; 3:4, 9. Compare Saladino, p. 79, Maimonides, Aphorisms, 9:88; 21:42, 82.

<sup>326</sup> Ibid., 21:96.

<sup>327</sup> Saladino, pp. 79, 112.

<sup>328</sup> Uphof, p. 111.

<sup>329</sup> Hooper, pp. 96–97.

<sup>330</sup> Reiani, no. 22.

<sup>331</sup> Gil, II, p. 724, no. 395; III, pp. 60–61, no. 445.

<sup>332</sup> al-Ishbili, p. 281.

<sup>333</sup> Ibn al-Baytar, al-Jami, II, p. 81; Leclerc, no. 836.

<sup>334</sup> Gil, II, p. 794, no. 395; III, p. 60; Gil, Kingdom, III, p. 258, no. 374; Goitein, Society, II, p. 574, see more: Amar, Cassia.

<sup>335</sup> Pegolotti, p. 63.

cassia in 16th-century Egypt, especially the role played by Jews.<sup>336</sup> Of special interest is a document that mentions Rabbi Yitzhak ben Shlomo (the Ari), a famous kabbalist leader in Safed, who traded in these fruits during his stay in Egypt.<sup>337</sup> Frederick Hasselquist describes the cultivation of the plant in Egypt and the preparation of its fruit for curative purposes.<sup>338</sup>

### Cattle, Products

*Bos taurus* (Bovidae), **A:** **jubn** [cheese], **zubda** [butter], **samn** [sour cream], **laban**, **halab** [milk], **baqar (marāra)** [cattle bile]

**D&H:** Milk, cheese, cheese water, butter, meat, urine. Sometimes the milk products of other mammals such as goats and donkeys were substituted. The origin of the domesticated bull or cow is from the wild ox (*Bos primigenius*). The bull, and especially the ‘zabo’ kind, was native to the Land of Israel even before the age of the biblical conquest and settlement. The bull is often mentioned in the Bible. It was kept together with other animals such as sheep, goats, donkeys, and camels, which served as work animals and a source of meat, milk, and its products.<sup>339</sup> From the Midrash of the Sages it can be learnt that: ‘Ten things make the patient revert to his illness, and his serious illness. These are: one who eats ox meat, fatty meat, roast meat, the flesh of birds and roasted egg, and garden cress, milk, cheese and the bath. And some say even walnuts, and others say even the marrow (Jerusalem Talmud, Berakhot, 57b).

**PU:** Different kinds of cattle products figure in 13 lists of *materia medica* and foods (Levantine cheese, T-S NS 306.117; cheese, T-S Ar.35.82; T-S NS 306.117; T-S Or.1081 J.71; cattle bile, T-S NS 305.38; butter, T-S Ar.35.252; T-S Ar.35.366; T-S NS 279.57; T-S Ar.30.274; T-S Ar.35.82; milk, T-S Ar.51.53; T-S NS 264.80; T-S Ar.35.328) and in 5 prescriptions: for dressing bites (cheese, T-S NS 164.98), topical application (milk, T-S Ar.30.99), swelling (T-S NS 194.70); eye complaints (milk, T-S NS 218.21), and for unknown uses (cattle dung, T-S NS 327.40). Maimonides in a personal letter recommends drinking two cups of milk a day as a treatment (T-S 10J20.5).<sup>340</sup>

<sup>336</sup> Summary of the sources in detail is in Amar, Cassia, p. 62.

<sup>337</sup> Shohatman.

<sup>338</sup> Hasselquist, p. 299.

<sup>339</sup> Plants & Animals, XII, p. 234; see product, figure 22.

<sup>340</sup> Goitein, Letter.

**TU:** Milk appears in medical books as used for the treatment of stomach complaints, along with other simples (T-S Ar.39.161). Its consumption with sugar, almonds, nuts, and other simples was part of a diet for weight increase (T-Sar.40.194). Fresh milk and butter are listed in a prescription for strengthening penile erection (T-S AS 181.82; T-S AS 181.112). Milk is also mentioned in a recipe for unknown uses drawn from Ibn Sīnā's *al-Qānūn* (ed. Bulaq, III:302–3; T-S Ar.41.96) and in an invalid's diet prepared from different kinds of food including milk (T-S AS 182.308). Butter, clarified butter, and cheese are mentioned in a fragment describing the value of several kinds of food for complaints such as obstructive diseases in the liver and kidneys, asthma, piles, gout, and hard swellings in the groin and underneath the ear (T-S Ar.41.118). It is also in a recipe for an ointment prepared from wax, violet oil, and old clarified butter (T-S Ar.43.238r). Butter is the base (with white honey, crystals of alum, and fennel) for an eye ointment for pains in the eye, dim vision and excessive lachrymation (T-S NS 90.6v). Old cheese is an antidote for diarrhoea with blood (T-S Ar.40.155). Ox bile is in a prescription for eye complaints, with collyria and venesection from the temples of the inner canthus (T-S AS 179.59). Marrow of cattle's leg appears in a lexicon of *materia medica* (T-S NS 306.134r).<sup>341</sup>

**OMU:** The physician al-Kindī, describes the medical use of cow's milk, ass's milk, and even the milk of a woman;<sup>342</sup> and 'laban', he says, is an ingredient in a prescription for treating leprosy, haemorrhoids, and the eyes.<sup>343</sup> Maimonides reports that milk is food, but also serves as a medicine to treat scorpion stings, and snake bite. According to him, even butter and cream are recommended as food. He advocates the use of milk and cheese as food to improve the blood in the body.<sup>344</sup> Saladino d'Ascoli describes methods of milk preservation and medical use (mainly for soaking), preferably goat's milk.<sup>345</sup> Dāwud al-Anṭākī in the entry 'Jibn' describes how to make cheese, its medical qualities as a cold and wet drug, and its ability to cause fatness. Its medical uses include the treatment of scabies, and weakness of the kidneys. Cheese is digested slowly and is preserved in salt or oil. It stops phlegm, strengthens the appetite, and 'dries harmful dampness'. Toasted cheese stops diarrhoea, opens

<sup>341</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>342</sup> al-Kindī, nos. 9–11, 40, 46, 96, 127, 140, 142, 166, 170, 178, 180, 258.

<sup>343</sup> Ibid., nos. 28, 37, 127, 166, 170.

<sup>344</sup> Maimonides, Poisons, pp. 105–109, 132, 140, 148, 150; Maimonides, Regimen, 1:8; 4:14; Maimonides, Aphorisms, 6:17. Cf. 20:39, 42.

<sup>345</sup> Saladino, p. 80.



putrid wounds, and is used to remove freckles (sun spots).<sup>346</sup> The medical use of cheese water (whey) is described by Ibn al-Bayṭār in his entry mā' al-jibn, and the use of this and of sour milk is described in the entry 'laban'.<sup>347</sup>

**TAI:** Cattle products, namely milk<sup>348</sup> and cheese,<sup>349</sup> were consumed as food and were used as medicinal substances; accordingly they were traded extensively in the Genizah society and the medieval Mediterranean (Alexandria, Būṣīr, Cairo, Palermo, North Africa).

**TM:** Yemenite Jews made medical use of many body parts and products of cattle: hooves, feet, lungs, gall, liver, fat, and milk products (similar use was made of the body parts and milk of the goat). Milk was used as a component in a medication to treat sore throat; leben was used to reduce fever and treat diarrhoea, and compresses were made with it for treating wounds and Rose of Jericho (leishmaniasis); cooked butter served as a base for ointments, for the treatment of diseases of the respiratory tract, and for digestion; to relieve labour pains and headaches; and as a purgative and an aid in curing haemorrhoids.<sup>350</sup> The Jews of Iraq made extensive use of milk, cheese, and cheese water (whey), which served mainly to improve virility.<sup>351</sup> Balls of dried cheese, called 'karkut', made from the milk of a cow, a buffalo, or goat, were used in Iran, Iraq, and Afghanistan both as medicine and as food after treatment against worms.<sup>352</sup>

## Cedar

*Cedrus libani* (Pinaceae), **A:** **arz**<sup>353</sup>

**D&H:** Majestic flat-topped tree (up to 40 metres), with dark green needle-like leaves and oval cones.<sup>354</sup> The cedar tree was famous in the ancient world as important building wood; the main product used in medicine was oil.<sup>355</sup> Dioscorides describes the use of various species of tamarisks (*Kedros*), the resin derived from them, and their medical uses.<sup>356</sup> The

<sup>346</sup> al-Antaki, p. 103. Cf. Ibn al-Baytar, al-Jami, I, pp. 157–159; Leclerc, no. 467.

<sup>347</sup> Ibn al-Baytar, al-Jami, IV, pp. 93–100, 132–134; Leclerc, nos. 2007, 2066.

<sup>348</sup> Goitein, Society, IV, p. 252; Gil, Kingdom, II, p. 752, no. 253; III, p. 264, no. 376.

<sup>349</sup> Gil, Kingdom, I, p. 562, II, p. 575, no. 194, IV, p. 319, no. 699, p. 582, no. 792.

<sup>350</sup> Re'iani, no. 153.

<sup>351</sup> Ben-Yakov, pp. 114, 148, 150, 715–716, 728.

<sup>352</sup> Hooper, p. 197.

<sup>353</sup> Issa, p. 43, no. 14.

<sup>354</sup> Chevallier, p. 183.

<sup>355</sup> Other products are tar and resin; see entries.

<sup>356</sup> Dioscorides, I.105.

resins of cedar and pine were used for various purposes, including curing humans and beasts (mainly for skin diseases), long before the flowering of Islamic medicine.<sup>357</sup> al-Birūnī describes the production of resin from various species of pine and cedar that grow in Syria (on the mountains of Lebanon). The resins served medical purposes but a high dosage was considered toxic.<sup>358</sup>

**PU:** Cedar figures in 6 lists of *materia medica* (T-S Ar.39.136; T-S AS 153.51; T-S AS 177.139; T-S NS 164.12; T-S NS 306.117 [2]; oil, T-S AS 176.22).

**TU:** Cedar is mentioned in medical books on ophthalmology (T-S Ar.44.13) and *materia medica* (T-S Ar.44.218; T-S AS 184.152), and in other fragments (T-S AS 183.271).<sup>359</sup>

**OMU:** al-Kindī describes the use of cedar tar to treat infections and earache and toothache, and also to treat poisons and lack of sanity.<sup>360</sup> A similar substance is used, according to him, to treat swellings of the lips, haemorrhoids, and mumps.<sup>361</sup> According to Maimonides, cedar tar was the main component in an enema and also served as a diuretic, a medicine to open obstructions in the urinary tract, and a component in a dressing for bites and stings. The drug was considered as hot and dry and was recommended for external use only. Cedar resin was a component in an aphrodisiac medication that 'stiffens the male sexual organ and prevents it from drooping quickly'.<sup>362</sup> Dāwud al-Anṭākī describes the process of production, noting that this is a hot and dry drug that furnishes protection against insects, and cures chills, chest pains, cough, and earache. It was also used to perform abortions and to cure diseases of the skin and eyes.<sup>363</sup>

**TM:** Yemenite Jews applied the resin of pine trees, which was extracted from bark of the tree, to cure wounds, to reduce fever of the wounds, and as a component in a medication against tuberculosis and lesions in the lungs. For the Jews of Iraq it served as a component of ointments to treat skin diseases such as scurvy, as a component in a medication to stop the menstrual cycle, and as one of the components in a dressing

<sup>357</sup> Ullman, *Medicine*, p. 217.

<sup>358</sup> al-Biruni, I, 270–271; II, 102.

<sup>359</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>360</sup> al-Kindi, nos. 105, 119, 202, 205.

<sup>361</sup> *Ibid.*, nos. 76, 121.

<sup>362</sup> Maimonides, *Aphorisms*, 13:35; 21:65, 89; Maimonides, *Poisons*, p. 102; Maimonides, *Sexual*, 12:1.

<sup>363</sup> al-Antaki, p. 261.

to treat swellings.<sup>364</sup> In Egypt ‘iṭrān’ was used internally in the 20th century to treat chest problems, and externally as an ingredient in various ointments.<sup>365</sup> Ethereal oils derived from the cedar were components in cleaning materials, soaps, cosmetic products, and preparations to repel insects.<sup>366</sup>

## Celery

*Apium graveolens* (Apiaceae), **A: karafs**<sup>367</sup>

**D&H:** Annual or biennial plant that grows throughout the region in damp soil. Its wide leaves are trifoliolate, its flowers white or reddish in colour, and its fruit pods are flattened and egg-shaped.<sup>368</sup> This plant has been cultivated for over 3000 years in China, Egypt, Greece, and Rome. It is mentioned in the Bible only once, in the Book of Esther (1:6) but the term there is identified with cotton.<sup>369</sup> Dioscorides recommends using various kinds of *selinon*, identified with celery, to treat the stomach, to ease breathing, for pains and coughs, and as a diuretic and emetic. He says that celery is an ingredient in theriac.<sup>370</sup> Celery is also mentioned by the Jewish Sages as an agricultural crop (Shevi’ith 9,1) and was a known crop in the medieval Levant.<sup>371</sup>

**PU:** Different products of celery figure in 2 lists of *materia medica* (T-S AS 179.80; T-S AS 180.199) and in 8 prescriptions: for weak eyesight and migraine [Maimonides] (root peel, T-S Ar.30.286), as purgative (water, T-S Ar.41.72), and for unknown uses (seeds, T-S Ar.30.291; T-S NS 265.62; T-S AS 173.3; root peel, T-S NS 305.75(76); water, T-S AS 177.417 as powder (root peel, T-S Ar.40.87).

**TU:** Celery appears in medical books’ prescriptions for pains (including joints), palpitation, theriac, sand in kidney, wounds, indigestion, haemorrhoids, looseness of bowels, stomach ailments, and colic, and as a purgative (T-S Ar.40.64; T-S Ar.40.85; T-S Ar.42.199; T-S Ar.44.187; T-S Ar.45.28) and for unknown uses (T-S Ar.40.87; T-S AS 151.56v; T-S AS 177.422); also in a lexicon of *materia medica* (T-S AS 179.80). It likewise appears in general medical books (T-S Ar.40.194; T-S Ar.41.78; T-S

<sup>364</sup> Ben-Yakov, pp. 108, 30, 233.

<sup>365</sup> Ducros, p. 190.

<sup>366</sup> Hill, p. 190.

<sup>367</sup> Issa, p. 19, no. 5; Maimonides, Glossaire, no. 196.

<sup>368</sup> Plants & Animals, XII, p. 83; Feinbrun-Dothan, p. 480.

<sup>369</sup> Feliks, World, p. 288.

<sup>370</sup> Dioscorides, III, pp. 74, 75.

<sup>371</sup> Amar, Agriculture, pp. 243–244.

Ar.41.104; T-S Ar.42.151; T-S Ar.43.98; T-S Ar.44.148; T-S Ar.44.149; T-S Ar.45.45; T-S AS 181.82), books on dermatology (T-S Ar.45.49), on ophthalmology (T-S Ar.43.201; T-S AS 182.37), on fevers (T-S Ar.43.155; T-S Ar.44.57), on poison (T-S Ar.44.77), on *materia medica* (T-S Ar.39.351; T-S Ar.39.369; T-S Ar.40.60; T-S Ar.41.133; T-S Ar.42.73; T-S Ar.42.115; T-S Ar.43.191; T-S Ar.44.76; T-S Ar.44.204; T-S Ar.44.205), in pharmacopoeias (T-S Ar.40.91; T-S Ar.41.114; T-S Ar.44.205; T-S Ar.45.19; T-S NS 222.21; T-S NS 222.69; T-S Or.1080 3.39; T-S Or.1081.1.6), and in other fragments (T-S Ar.38.33; T-S Ar.39.472; T-S NS 297.127). Celery seeds were used against diarrhoea (T-S Ar.41.104), flatulence, warts, dysuria, dysmenorrhoea, and hard swellings, and as an abortifacient in the case of a dead foetus (T-S Ar.42.151). Leaves were used treat inflammatory swellings of the breast (T-S Ar.40.171). The roots is listed in prescriptions to strengthen penile erection (T-S AS 181.82; T-S AS 181.112). Celery water is mentioned for the treatment of sciatica, varicose veins, and venesection (T-S NS 306.172).<sup>372</sup>

**OMU:** According to the physician Assaf, the plant which grew in streams was called ‘karpasa damia’ and was a hot drug used for curing kidneys, infected lesions, and skin diseases.<sup>373</sup> al-Kindī notes the use of celery seeds in treating stomach disorders and in the preparation of ointments to improve the memory.<sup>374</sup> Maimonides in his medical treatises mentions many uses of the plant. For instance, the oil in which celery seeds were fried was a component in a clyster and in theriac, and also helped urine flow, while the root of the plant was considered a general medication for strengthening.<sup>375</sup>

**TM:** Arabs in Israel use marsh celery (*Apium nodiflorum*) to treat diseases of the spleen, and it is also used as a stimulant.<sup>376</sup> Yemenite Jews used aromatic celery to stimulate bowel movement, as a light purgative, to cure haemorrhoids, to dissolve kidney stones, to increase urine flow, and to treat swellings. An extract from the seeds is used to treat toothache and gum inflammation.<sup>377</sup> In Iraq, the roots are used as a diuretic and the seeds as a stimulant, to dispel gases, to arouse sexual desire, to calm nerves, and as an ingredient in a preparation against rheu-

<sup>372</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>373</sup> Assaph, IV, p. 414.

<sup>374</sup> al-Kindī, nos. 1–2, 59, 113–114, 211, 225.

<sup>375</sup> Maimonides, Poisons, p. 111; Maimonides, Aphorisms, 9:47; 18:32; 21:65, 70, 80. Maimonides, Regimen, 2:10.

<sup>376</sup> Dafni, Edible, p. 69.

<sup>377</sup> Reiani, p. 10, no. 11.

matism.<sup>378</sup> In Egypt the seeds, which are sold in the bazaars, serve as a diuretic, emmenagogue and to dispel gases.<sup>379</sup> Celery seeds are used in TM to dispel gases, as stimulants, emmenagogues, painkillers, and nerves strengtheners, and are effective against stomach pains.<sup>380</sup>

### Chate melon

*Cucumis melo var. chate* (Cucurbitaceae), **A:** qiththā', fāqqūs<sup>381</sup>

**D&H:** Annual vegetable, hairy leaves and tendrils. The flowers are yellow and the fruit is long (20–60 cm), hairy, and grooved. It was identified as the vegetable that the Israelites ate in Egypt (Numbers, 11, 4) and later in the Land of Israel at the time of the Jewish Sages (see figure 23).

**PU:** Chate melon figures in 4 lists of *materia medica* (T-S AS 184.234; seeds, T-S NS 164.12; T-S Ar.39.450; T-S NS 264.86) and in 5 prescriptions: for liver problems (T-S Ar.39.274), cough (T-S 8J15.20), as an aphrodisiac (T-S NS 164.159) and for unknown uses (T-S Or.1080.1.87; seeds, T-S NS 223.82–83 [family recipes]).

**TU:** It is mentioned in medical books' recipes for unknown uses (T-S Ar.39.355) and in one for liver diseases (T-S Ar.45.40). It also appears in medical books (T-S Ar.43.98; T-S Ar.44.101), books on fevers (T-S Ar.44.57), on sex (T-S Ar.44.79), on *materia medica* (T-S Ar.44.204; T-S Or.1080 2.74); in pharmacopoeias (T-S Ar.11.13; T-S Ar.40.91; T-S Ar.44.37; T-S Ar.44.205; T-S NS 164.30; T-S NS 222.21), and in other fragments (T-S Ar.38.40; T-S Or.1080.13.34; T-S Or.1080.13.12).<sup>382</sup>

**OMU:** Ibn Sīnā states that chate melon leaves are used to treat wound and dog bites. The fruit serves as a diuretic, to quench thirst, and to heal stomach ailments.<sup>383</sup> Ibn al-Bayṭār writes that the chate melon cools the body and is prescribed to treat fevers.<sup>384</sup>

**TAI:** The chate melon was among the common vegetables in the diet of the Genizah society.<sup>385</sup>

<sup>378</sup> Hooper, p. 86; al-Rawi & Chaakravarty, p. 14 which gives detailed contents of substances.

<sup>379</sup> Ducros, p. 31.

<sup>380</sup> For details, including contents of substances, see Uphof, p. 42. Cf. Grieve, p. 182.

<sup>381</sup> Issa, p. 62, no. 5.

<sup>382</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>383</sup> Ibn Sina, I, p. 425.

<sup>384</sup> Ibn al-Baytar, al-Jami, IV, p. 4.

<sup>385</sup> Goitein, Society, IV, p. 232.

## Cherry

*Prunus avium* (sweet cherry), *P. cerasus* (sour cherry) (Rosaceae), **A:** **qarāṣiyā ḥabb al-mulūk**<sup>386</sup> (the last is also a name for *Croton tiglium*)<sup>387</sup>

**D&H:** The cherry is a deciduous tree with fruit growing in bunches on spikes, or as individual berries on long thorns. The fruit ripens in summer and its colour is dark red (sweet cherry) or yellow, pink, and black (sour cherry). The tree is cultivated in high, mountainous areas.<sup>388</sup> In medieval literature the cherry was commonly called ‘ḥabb al-mulūk’ (seed of kings). The term ‘kerasia’ sometimes means *Prunus ursina* and sometimes *Prunus cerasia* because their morphological and linguistic similarity created confusion and caused an interchange of terminology.<sup>389</sup> The general name of cherry covers various types of fruit of the rose family. The Hebrew names ‘gudgedaniot’ (in the Mishna) and ‘gadgedaniot’ (in the Talmud) were wrongly identified by Jewish commentators with ‘duvdevaniot.’ It seems that the cherry was not known in the region during biblical, mishnaic, and talmudic times, never held any place of importance in the economy, and was not agriculturally cultivated.<sup>390</sup> From historical sources and archaeological-botanical discoveries in Europe the cherry appears for the first time in the Roman period.<sup>391</sup> Dioscorides notes that the *kerasia* plant is used to treat the stomach and is known to cause constipation. The tree’s resin served as a remedy for cough, to improve appetite and the eyesight, and to eliminate stones in the urinary tract.<sup>392</sup> The cherry tree apparently arrived in the Land of Israel only during the Crusader period. The first evidence of its growth in the country is in a description by the Russian pilgrim Daniel, who visited the Holy Land during in 1106–1108 CE and noted their cultivation in the Hebron mountains.<sup>393</sup>

**PU:** Cherry figures in 10 lists of *materia medica* (T-S Ar.35.137; T-S Ar.39.139; T-S AS 184.234; T-S NS 164.12; T-S Ar.35.366; T-S Ar.39.450; T-S NS 306.117; T-S NS 321.49; T-S Ar.35.366; T-S NS 321.49) and in 9

<sup>386</sup> Issa, p. 148, no. 18, Maimonides, Glossaire, no. 330.

<sup>387</sup> Issa, p. 60, no. 19.

<sup>388</sup> Plants & Animals, XII, pp. 112–113.

<sup>389</sup> Maimonides, Glossaire, p. 23, no. 330. Detailed discussion in Amar, Production, p. 107.

<sup>390</sup> Feliks, Fruit Trees, pp. 265–267; Amar, Production, p. 107; Low, III, pp. 169–175.

<sup>391</sup> Zohary & Hopf, pp. 171–172.

<sup>392</sup> Dioscorides, I.157.

<sup>393</sup> Daniel: in Raba, p. 51, n. 279.

prescriptions: for fever (T-S AS 155.277; T-S NS 306.177), as an aphrodisiac (T-S NS 164.159), as a diet (T-S Ar.41.71) and for unknown uses (T-S Ar.34.150; T-S AS 183.216; T-S NS 305.76(76); T-S Or.1081.1.66; sweet, T-S 12.33).

**TU:** Cherry products are mentioned in recipes for diet and as an aphrodisiac (T-S NS 164.159), and for unknown uses (T-S NS 90.51), and in a lexicon of *materia medica* (T-S Ar.39.450; T-S Ar.41.130; T-S NS 164.12). It also appears in medical books (T-S Ar.39.91; T-S AS 144.179) and pharmacopoeias (T-S Ar.40.91; T-S NS 222.67).<sup>394</sup>

**OMU:** Maimonides claims that cherries are a light purgative.<sup>395</sup> Saladino d'Ascoli describes the 'grano rigon' (royal seed) or 'ḥabb al-mulūk', which has two types of fruit, small and large, and which is hot and dry and is used as a purgative and an emetic. The seeds produce an oil resembling almond oil.<sup>396</sup> Dāwud al-Anṭāki states that the 'qarāṣiyā' is a cold and dry medicine to treat depression, fainting fits, thirst, cough, loss of memory, internal wounds, and obstructions in the urinary tract.<sup>397</sup>

**TM:** The fruit is used for food and to make jams, compotes, and alcoholic beverages. Oil produced from the seeds was used as food or in cosmetic preparations.<sup>398</sup> In Europe the fruit of various types of cherry were used as a constricting astringent, a stimulant, and a cure for breathing problems and anemia.<sup>399</sup>

**TAI:** Cherry grew in Syria and was traded in small volume. Maimonides describes the 'qarāṣiyā' and states that its fruit resembles the plum though it is smaller, has a sour taste, and can be found in Egypt and the Land of Israel.<sup>400</sup> According to al-Dimashqī, the 'qarāṣiyā' was one of 90 plant species growing on Mount Lebanon from which one could make a living by gathering its fruit.<sup>401</sup> During the Mamluk period the cherry was included among the rare fruits in the Land of Israel.<sup>402</sup> At the end of this period the cherry seems to have disappeared entirely from the plant life of the country, as Rabbi Ovadia of Bartenura testifies: 'One cannot

<sup>394</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>395</sup> Maimonides, Regimen, 2:7.

<sup>396</sup> Saladino, p. 98, no. 174.

<sup>397</sup> al-Anṭaki, pp. 255–256.

<sup>398</sup> Plants & Animals, XII, pp. 112–113.

<sup>399</sup> Uphof, p. 430; Hill, p. 392.

<sup>400</sup> Maimonides, Glossaire, p. 23, no. 330. This description matches the sour cherry and also *Prunus cerasia* which has two varieties: sweet and sour. Detailed discussion in Amar, Ibn al-Baytar, p. 61, no. 34.

<sup>401</sup> al-Dimashqī, p. 199.

<sup>402</sup> al-Qalqashandī p. 87; Borchard, p. 87.

find the ‘gadganiot’ which are the ‘qarāšiyā’—neither the sweet nor the sour kind.<sup>403</sup>

## Chicken, Products

*Gallus gallus domesticus* (Phasianidae), **A: dajāj, dajāja, egg—bayḏ**

**D&H:** Used for medicine: Meat, fat, liver, gall, testicles, eggshell, egg yolk, and egg white. The chicken was apparently domesticated in China and India in the sixth millennium BCE (according to archaeological findings), and is mentioned for the first time in a Chinese encyclopaedia of the 14th century BCE. It seems to have been brought from India to Persia, whence it became widespread in the Middle East and in Europe. The chicken is not mentioned in the Bible but it appears to have been known to the inhabitants of the Land of Israel during that period. Proof of this is found in drawings discovered on pottery shards of the 7th and 6th centuries BCE.<sup>404</sup> According to Talmudic commentaries the chicken arrived in the country with the Kuttim, the people that the king of Assyria brought to the cities of Samaria to replace the exiled Israelites. During the Second Temple period chicken farming was widespread, according to the numerous rabbinic sources (mainly in the Talmud) concerned with chickens and eggs (for the medical connection see, for example, Bab. Talmud, Berakhot, 57a). Dioscorides reports on the use of egg white (*oon*), which was a component in medications for curing the eyes and for infections, and in a preparation against diarrhoea. White of egg (*leukon tou oou*) and egg and its yolk (*lekithos*) served to cure diseases such as eye infections, putrid wounds, sunburn, and swellings of internal organs.<sup>405</sup> Chicken eggs were commonly used in Muslim TM, originally attributed to the Prophet Muhammad in ‘al-ṭibb al-nabawī’.<sup>406</sup>

**PU:** Chicken and eggs figure in 4 lists of *materia medica* (eggshell, T-S NS 305.69; egg, T-S AS 177.139; chicken, T-S Ar.35.229; T-S AS 153.51) and in 4 prescriptions: to stop bleeding (T-S NS 139.31), dressing bites (egg yolk, T-S NS 164.98), and unknown uses (chicken, T-S NS 223.82–83

<sup>403</sup> Rabbi Ovadia of Bartenura in: Ya’ari, Letters, p. 132.

<sup>404</sup> Plants & Animals, XII, p. 252.

<sup>405</sup> Dioscorides, II.54.55.

<sup>406</sup> Ibn al-Qayyim, p. 188.



[3]; T-S 12.33 [cooked]); also in an alchemical astrological preparation egg [2], egg water [1], eggshell [2] ).

**TU:** Chickens served as an important foodstuff in regular diet as well as medical, as we will see below, but in several cases it was considered as invalid's food for certain diets (T-S AS 161.7; T-S AS 182.308). Chicken fat is mentioned in a lexicon of *materia medica* (T-S NS 306.134r) and eating chicken soup with onion and chickpeas is given as advice to a patient, together with drinking wine with other simples and smearing himself with chamomile oil and nard (T-S AS 166.208r). Egg white appears in a prescription for the treatment of inflammatory swellings, found in chapter 15 of an unknown book (T-S Ar.40.171), and with egg yolk among other simples in a recipe for unknown uses (T-S AS 177.304). It is also mentioned in a prescription for eye diseases, copied, according to Isaacs, with some modifications from 'Alī b. 'Īsā's *Tadhkirat al-kaḥḥālīn* (ed. Hyderabad, p. 347; T-S NS 306.48r). A Jewish physician, Sulaymān ibn Mūsā, who practised medicine at the hospital in Cairo, is named in a letter on the verso.<sup>407</sup>

**OMU:** The physician Assaf tells of the use of egg oil for hair growth, to treat the heads of children, and also as a medication for haemorrhoids.<sup>408</sup> al-Kindī states that egg white is a component in a dressing against haemorrhoid pains, and is also used to soften haemorrhoids and various kinds of wounds. Egg yolk served to treat pains of the anus and was also a medication for eye diseases and for stings.<sup>409</sup> al-Ghāfiqī cites many physicians when noting that bird eggs arouse sexual desire.<sup>410</sup> Maimonides reports that the chicken's meat, testicles, and the yolk of its egg are good, healthy food. Chicken in lemon juice served as a purgative. The testicles of the chicken and egg yolk were used for general strengthening, to cure eye diseases, and against breathing difficulties. Egg yolk is mentioned as a component in an ointment to stop haemorrhages, while boiled egg was an ingredient in a medication against extreme diarrhoea. A beaten egg was an ingredient in a medication to improve the quality of sperm and penile erection.<sup>411</sup> Ibn al-Bayṭār describes many medical uses of the chicken listed by classical physicians (Dioscorides, Galen, etc.)

<sup>407</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>408</sup> Assaph, IV, 399.

<sup>409</sup> al-Kindī, nos. 35, 76, 130, 132, 164, 173. Cf. Ibn Sina, p. 270.

<sup>410</sup> al-Ghāfiqī, nos. 188, 258.

<sup>411</sup> Maimonides, Regimen, 1:6, 7; Maimonides, Aphorisms, 2:2; 9:116; 15:14, 28; 20:19, 20, 22, 58; 22:61. On the importance of chicken soup in medieval medicine according to Maimonides see Rosner, Encyclopaedia, pp. 55–56.

and by well-known Arab physicians (e.g., al-Rāzī).<sup>412</sup> Many medical uses of chicken eggs are also mentioned.<sup>413</sup> Saladino d'Ascoli recommends the use of an old red rooster with a high-pitched crow (which shows strong sexual desire).<sup>414</sup> Dāwud al-Anṭākī mentions the use of eggs in many entries. Egg yolk, for example, together with the froth of samakat ṣaydā,<sup>415</sup> was a component in a preparation to increase sexual desire. Hayyim Vital describes the following uses: eggshells against stones and blockages in the urinary tract, and one of the components of kohl for the eyes; soft-boiled egg to treat phlegm in the throat; and egg yolk to treat haemorrhoids.<sup>416</sup>

**TM:** Yemenite Jews made extensive use of the chicken for medical purposes. A whole chicken was used to treat snakebite; the liver for curing night blindness, to strengthen the body, and against eye infection; the gall to treat eye diseases, infections and pains; the eggs to treat throat pains, to strengthen bones, and to cure fractures in the limbs; eggshell to strengthen the teeth and gums; fat to cure wounds and to improve digestion.<sup>417</sup> The Jews of Iraq also used the meat of the chicken as a remedy,<sup>418</sup> as well as its eggs.<sup>419</sup>

**TAI:** Chickens as well as their eggs were an important part of the diet of the members of Genizah society,<sup>420</sup> and of other medieval societies. They were also used for medicine, and therefore appear in several fragments regarding diet, including that for the sick.<sup>421</sup>

## Cinnamon

Ceylon, cinnamon *Cinnamomum zeylanicum* **A:** qirfa, dār ṣīnī<sup>422</sup> Chinese cinnamon-tree [cassia tree] *Cinnamomum cassia*, (Lauraceae) **A:** salikha<sup>423</sup>

<sup>412</sup> Ibn al-Baytar, al-Jami, IV, pp. 88–89; Leclerc, no. 854. Cf. al-Antaki, pp. 151–152.

<sup>413</sup> Ibn al-Baytar, al-Jami, I, pp. 129–130; Leclerc, no. 392. Cf. al-Antaki, pp. 89–90.

<sup>414</sup> Saladino, pp. 83–84.

<sup>415</sup> al-Antaki, p. 200.

<sup>416</sup> Vital, Extracts, pp. 92, 97, 99, 101, 102.

<sup>417</sup> Reiani, no. 161.

<sup>418</sup> Ben-Yakov, pp. 142, 236, 262.

<sup>419</sup> See references in Ben-Yakov, pp. 700–701.

<sup>420</sup> Goitein, Society, I, pp. 124, 261, II, p. 100, no. 228; III, p. 194, IV, pp. 230–233, 247–250.

<sup>421</sup> Goitein, Society, IV, pp. 232–238, 422, 433–434, 443, 250.

<sup>422</sup> Maimonides, Glossaire, p. 37, no. 95; Issa, p. 49, no. 5; Ibn Rushd, no. 165.

<sup>423</sup> Issa, p. 49, no. 3.

**Identification:** The two species were common in the ancient world in the middle ages. Due to their similarity, their Arabic names were interchanged or used for the other species. *dār šinī* was the common name for both species, *qirfa* for Ceylon cinnamon, and *salikha* for Chinese cinnamon-tree (see figure 25).

**D&H:** The cinnamon species comprises 275 varieties of large trees that grow in India and Eastern Asia. Some of these are of medicinal use, are used for spice, or are grown as garden trees. The Ceylon cinnamon (from Sri Lanka) is a large, tall, tropical tree or shrub with a pungent scent. Its leaves are wide with prominent veins, its flowers are small and yellow, and its fruit is a dark, grape-like berry. The spice, made from the bark of the tree, is marketed still today as in the past in the form of rolled pieces of bark or as a ground powder.<sup>424</sup> Cinnamon is one of the plants in use since early times as a condiment, for incense, and for medication.<sup>425</sup> It is mentioned in the Bible several times and in various contexts, such as the brazen woman who perfumed her bed (Proverbs, 7:17) or as an ingredient in holy oil (Exodus, 30:23). The Talmud mentions frankincense for the Temple, of which cinnamon was a component.<sup>426</sup> Hippocrates writes about it and lists its medicinal uses. Dioscorides describes the *kinamomon* and notes its use in regulating menstruation and in aborting the fetus. He also believes that the substance is effective in treating toxicity caused by poisonous creatures. Among the medicinal properties he lists are increasing urine flow and curing cough and kidney ailments.<sup>427</sup> The Talmud records the ‘zangbila and darzina’ as the varieties of spices which a woman ‘puts into her mouth’ on the Sabbath. The Gaonim and Rashi in their Talmudic commentaries identify ‘darzina’ with Chinese cinnamon. Another name that appears in the writings of the Jewish Sages and which is identified with cinnamon is ‘kilofa.’ The botanist Feliks identifies this with cinnamon bark, which is called ‘qirfa’ in Arabic.<sup>428</sup>

**PU:** Cinnamon figures in 7 lists of *materia medica* (T-S Ar.30.274; T-S Ar.35.252; T-S Ar.35.326; T-S Ar.43.317; T-S AS 184.234; T-S AS 183.159; T-S NS 306.117) and in 9 prescriptions: for weakness of the eyesight and migraine [Maimonides] (T-S Ar.30.286) and unknown uses (T-S Ar.41.81; T-S Ar.41.125; T-S Ar.43.338 [2]; T-S AS 173.3; T-S

<sup>424</sup> Hill, p. 443; Zohary, p. 309.

<sup>425</sup> Riaz & Chaudhary.

<sup>426</sup> For a discussion on cinnamon in the Bible and Jewish sources see Feliks, World, pp. 263–264.

<sup>427</sup> Dioscorides, I.13.

<sup>428</sup> Feliks, World, p. 264.

AS 182.167; T-S AS 182.179; T-S AS 182.242); one is named *ma'jūn hibbat allāh* (T-S Ar.34.305 [3]).

**TU:** Cinnamon was an important simple in medieval times, attested in many fragments of medical books (T-S Ar.11.31; T-S Ar.39.166; T-S Ar.44.148; T-S Ar.44.149; T-S Ar.45.45; T-S NS 90.71). It appears in a copy of Ibn Sīnā's *al-Qānūn* [ed. Bulaq, I:288] according to Isaacs (T-S AS 184.152), and in recipes for unknown uses (T-S Ar.41.90; T-S AS 166.126; T-S AS 167.36; T-S AS 169.282; T-S AS 179.328); a recipe is attributed to Galen (T-S NS 224.226r) and another [two potions] to Galen and Archigenes (T-S NS 306.54). Yet another was made up by the anonymous pharmacist known as al-Dimashqī (the Damascene; T-S Ar.39.65). Cinnamon is also found in recipes for the treatment of colds and coughs: one prescription is attributed to Galen and another is an oxymel attributed to Ibn Māsawayh (T-S Ar.11.11); entropion, and roughness of the eyelids (T-S Ar.39.167), colic and coughs [pills] (T-S NS 90.61), obstruction, flatulence, diarrhoea, pleurisy, and trembling (T-S AS 179.110). Cinnamon bark is mentioned in recipes for coughs, cold, palpitation, theriac, a purgative, a general tonic, for stomach ailments, and for colic (T-S Ar.42.199; T-S Ar.43.320; T-S Ar.45.28). Chinese cinnamon with marrow was used for sexual enhancement (T-S AS 180.209, 208, 210). It also features in recipes for unknown uses (T-S AS 183.106). Cinnamon bark is present in a recipe which, according to Isaacs, is taken from al-Kindī's *Kitāb kimīyā al-'iṭr* [The book of the chemistry of perfume] (T-S Ar.41.29). It also appears in works on ophthalmology (T-S Ar.43.166), and pediatrics (T-S Ar.45.20), *materia medica* (T-S Ar.41.29; T-S Ar.43.191), in pharmacopeias (T-S Ar.40.9; T-S Ar.41.114; T-S Ar.44.205; T-S NS 305.116; T-S NS 306.54; T-S Or.108.116), and in other fragments (T-S Ar.39.472; T-S NS 306.115; T-S AS 163.9; T-S Or.1081.J.60).<sup>429</sup>

**OMU:** The physician Assaf describes 'cinnamon which is called "qir-fah" in Arabic' and lists its uses: improving digestion, increasing urine flow, as an emmenagogue, for abortions, as a cure for eyes, ears, cough, cold, and skin diseases, and for removing obstructions in the urinary tract.<sup>430</sup> al-Kindī uses 'dār ṣīnī' as a medicine for general strengthening and imparting a sense of well-being, to fortify the stomach and liver, and to treat the teeth and breathing problems.<sup>431</sup> 'Qirfa' is identified with

<sup>429</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>430</sup> Assaph, 4, p. 394.

<sup>431</sup> al-Kindī, nos. 3, 106, 213, 216. Cf. Ibn Sīnā, pp. 288–289; al-Biruni, II, pp. 92–93.

the inner part of the cinnamon tree and served mostly as a substitute for 'dār ṣīnī.' al-Kindī uses it to cure deep depression, to improve hearing, and to relieve neck pains.<sup>432</sup> Maimonides lists many medicinal uses for cinnamon by all its different names: a component in cathartic drugs, in a medication against poisons, bites, and stings by poisonous creatures, in a medicine against obstructions in the stomach and for haemorrhoids, as a strengthening medicine, and as a spice.<sup>433</sup> Maimonides also notes its use as an effective preparation for coitus for maintaining erection in its course, and in 'the great aṭrīfal', a medication which among other things strengthens the limbs and aids coitus.<sup>434</sup> al-Ghāfiqī and Ibn al-Bayṭār in their entries 'dār ṣīnī' list the names, types, and various medicinal uses of cinnamon.<sup>435</sup> In his entry 'duhn al-dār ṣīnī' Ibn al-Bayṭār describes its use as medicinal oil, citing Dioscorides.<sup>436</sup>

**TAI:** Cinnamon was an important commodity, with records of its extensive trade found in many merchants' letters and other Genizah fragments mainly of the 11th century. It was shipped from Egypt to the West by various wholesalers, including the highly respected 11th-century merchant Nahray ben Nissim.<sup>437</sup> Cinnamon features in relation to cities and ports such as Cairo, Alexandria, Qayrawān, Mahdiyya, Jerusalem, Tyre, Ramlah, Palermo, and Spain.<sup>438</sup> A 13th-century register of customs duties lists cinnamon among imported merchandise traded in Acre.<sup>439</sup> Ashtor notes that these expensive products were sent overland by caravan route from Iran and Iraq because sea transportation would damage them.<sup>440</sup> Cinnamon also appears in a list of substances (1233 CE) imported by Italians to Europe from Syria.<sup>441</sup>

<sup>432</sup> al-Kindi, nos. 3, 68, 109. Cf. al-Biruni, I, pp. 265–266.

<sup>433</sup> Maimonides, Aphorisms, 9:46; 13:6; 21:42, 80; 23:66; Maimonides, Poisons, pp. 103, 109.

<sup>434</sup> Maimonides, Sexual, Introduction, 2; 13:1; Maimonides, Regimen, 3:11.

<sup>435</sup> al-Ghāfiqī, no. 232; Ibn al-Baytar, al-Jami, II, pp. 83–85; Leclerc, no. 841. Cf. al-Antaki, p. 149.

<sup>436</sup> Ibn al-Baytar, al-Jami, II, p. 104; Leclerc, no. 902.

<sup>437</sup> Goitein, Society, I, p. 154, 219, 337, and see indices.

<sup>438</sup> Gil, Kingdom, see indices.

<sup>439</sup> Assises, II, p. 173.

<sup>440</sup> Ashtor, Levant, p. 33.

<sup>441</sup> Venice Laws, p. 285. Translation and analysis in Prawer, Colonial, p. 480.

## Citron

*Citrus medica* (Rutaceae), **A:** 'utrunj, 'utrujj<sup>442</sup>

**D&H:** An evergreen tree with short spiny branches and light green ovate leaves. The fruits are the shape of lemons but bigger. Sweet lime has been known in the Middle East since early times. In Jewish tradition the fruit is identified with 'the fruit of goodly trees' (Leviticus 23:40). Some researchers assume that it reached this region only in the 4th century BCE in the wake of the conquest by Alexander the Great.<sup>443</sup> Sweet lime was widespread in the Land of Israel during the period of the Mishna and Talmud, a fact reflected, among other things, in stone carvings, coins, and mosaics; this is contrary to the opinion of al-Mas'ūdī that the sweet lime reached this region together with the orange in the 10th century.<sup>444</sup> The source of the Hebrew name 'etrog' is Persian, and the Sages mention it very often (e.g., Mishna, Sukkah, 3:6).<sup>445</sup> According to Dioscorides, *Mela Persica* was a medication for various stomach problems.<sup>446</sup> In Arab tradition a few physicians attributed medical properties to various parts of the sweet lime, citing the Prophet Muḥammad.<sup>447</sup>

**PU:** Different kinds of sweet lime figure in 2 lists of *materia medica* (T-S NS 306.117; T-S Or.1081.J.71) and in 4 prescriptions: for weak eyesight and migraine (Maimonides; peel, T-S Ar.30.286) and unknown uses (T-S Ar.43.338; T-S AS 173.3; T-S NS 222.34 [plaster]).

**TU:** Sweet lime is mentioned in general medical books (T-S Ar.40.1; T-S Ar.41.47; T-S Ar.44.51; T-S Ar.44.101; T-S Ar.44.130; T-S Ar.44.148; T-S Ar.44.149; T-S Ar.45.19) such as of Ibn Sīnā (T-S Ar.42.167), and in books on ophthalmology (T-S Ar.44.79), dermatology (T-S NS 90.66), fevers (T-S Ar.44.208), and *materia medica* (T-S Ar.44.67; T-S Ar.44.204); also in pharmacopoeias (T-S Ar.40.91; T-S Ar.40.112; T-S Ar.41.123; T-S NS 306.58) and other fragments (T-S Ar.41.115; T-S NS 222.41).<sup>448</sup>

**OMU:** According to the physician Assaf, the peel of the sweet lime warms the body, while the pith of the fruit cools it; the juice of the sweet lime expels gases from the intestines and cures spasms; the seeds are effective

<sup>442</sup> Maimonides, Glossaire, no. 1; al-Ghafiḳi, no. 11; al-Biruni, p. 69.

<sup>443</sup> Tolkwosky, p. 49 ff. Cf. Feliks, Fruit Trees, 150; Feliks, Citron.

<sup>444</sup> al-Mas'ūdi, II, 438–439. Discussion in Amar, Production, p. 55.

<sup>445</sup> Additional sources and history of the fruit are in Goor, Fruits, pp. 181–220.

<sup>446</sup> Dioscorides, I.164.

<sup>447</sup> Ibn al-Qayyim, pp. 185–186.

<sup>448</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

in curing kidney disease; and the oil of the peel cures earache.<sup>449</sup> Shab-betai Donolo reports on the use of the leaves in ointments for external use.<sup>450</sup>

Maimonides describes the various uses of sweet lime in medicine and states it is a 'light and safe' drug, a component in a medication to strengthen the body, the heart, and the senses, to delay aging, to counteract nausea, and to help digestion; also that it is effective against snakebite, toxins, and the stings of poisonous creatures; it improved virility and perfumed the breath.<sup>451</sup> Al-Ghāfiqī and Ibn al-Bayṭār cite various physicians who describe the use of the sweet lime to strengthen the stomach, to increase appetite, to prevent thirst, to halt diarrhoea and vomiting, to strengthen the heart, and to reduce fever. Sweet lime was also recommended for treating jaundice, skin diseases, snakebite, scorpion bite, internal infections, and haemorrhoids.<sup>452</sup> Al-Qazwīnī also describes the use of the fruit: chewing the peel and leaves sweetens the breath, the peel is also effective against partial paralysis, and the juice extracted from it is effective against snakebite. The ash of the peel is good against leprosy and skin diseases. The acid derived from the sweet lime is used for eye make-up, to remove freckles, and to calm strong sexual desire in women. The seed of the sweet lime was crushed and placed over the sting of a scorpion to soothe the pain.<sup>453</sup>

**TM:** In Iraq the fruit of the sweet lime was used to treat jaundice and to reduce fever. The Jews of Iraq had other uses for the tree, such as dissolving kidney stones and stopping haemorrhages and vomiting.<sup>454</sup> Yemenite Jews used the fruit against internal infections, to strengthen the heart and stomach, and to treat kidney stones. The peel of the fruit was used to eliminate moisture and to treat colds and leprosy. The seeds were a medication against scorpion bites.<sup>455</sup>

**TAI:** al-Muqaddasī lists the sweet lime among the widely found fruit trees in Falastin. In his description of an area in Persia, he notes that its fruits resemble those in Ramlah. He also notes that sweet limes were

<sup>449</sup> Assaph, IV, 39.

<sup>450</sup> Donolo, p. 22.

<sup>451</sup> Maimonides, Regimen, 2:10; 3:8, 11; 4:11; Maimonides, Aphorisms, 20:88; 21:68; 22:45; 25:34; Maimonides, Poisons, pp. 102, 105, 107, 118, 142; Maimonides, Sexual, p. 23.

<sup>452</sup> al-Ghāfiqī, no. 11; Ibn al-Bayṭār, al-Jami, I, 10–11; Leclerc, no. 16.

<sup>453</sup> al-Qazwini, pp. 216–217.

<sup>454</sup> al-Rawi & Chaakravarty, p. 28; Ben-Yakov, pp. 73, 126, 136, and additional references on p. 698.

<sup>455</sup> Reiani, no. 30.

sold in the markets of Jerusalem.<sup>456</sup> During the period of Crusader rule (11th–12th cent.) the cultivation of sweet lime in the Land of Israel is mentioned,<sup>457</sup> as it is in the Mamluk and Ottoman periods. The cultivation of sweet limes in the country during those periods is described by many geographers, writers, pilgrims, and travellers.<sup>458</sup>

## Clay

Earth, bole, A: **ṭīn**, **ṭīn al-ʿabyad**, **ṭīn qubrusī**, **ḥajr ʿarmanī**

**D&H:** Under the entry ‘ṭīn’ Maimonides details the different types of earth and clay in use in the region in his day.<sup>459</sup> The researcher Hooper identified some of these substances and listed their uses in Iran and Iraq today.<sup>460</sup> The use of various types of clay and earth is noted by the classical physicians Dioscorides<sup>461</sup> and Galen (2nd century); they were in use in Europe until the 17th century.<sup>462</sup> Different types of earth, clay, and chalk were also used for food and remedies in the Middle Ages, and even in the modern period in various cultures (see figure 24). The main kinds are: **Sigillated Earth** (*ṭīnṭīn makhtūm*): sold in the form of a dry and soft cake, without chalk, used in Iran and Iraq to bind wounds after wetting. **Armenian Earth** (*ḥajr armanī*; *ṭīnṭīn armanī*): composed of oxidized iron with lime chalk. Red substance, used for external treatment of skin diseases, burns, and pain. **Cyprus Clay** (*ṭīn qubrusī*; *ṭīnqubrusī*): eaten by pregnant women. **Edible Clay** (*ṭīn sarshūr*): identified with Afghan edible clay. A local clay that was mainly used to clean the hair and for cosmetics. **Russian Clay** (*ṭīn daʿathan*): a gray-white clay composed mainly of silicon and aluminium, a thick and soapy substance. Imported from Russia and used externally on infected areas of the body. Used internally to strengthen pregnant women. **Samian Earth** (*ṭīn samūs*): According to Dioscorides, a clay used to prevent vomiting with blood. Hooper reports also on the use of various types of edible clay such as yellow clay originating in Asia Minor (Turkey), and another

<sup>456</sup> al-Muqaddasi, pp. 181, 186, 357.

<sup>457</sup> For example, Jacques de Vitry, p. 1099; Khusraw, pp. 12, 18; al-Asfahani, p. 103.

<sup>458</sup> Collected sources in: Amar, Production, pp. 57–58; Goor, Fruits, pp. 20–206.

<sup>459</sup> Maimonides, Glossaire, no. 172; Laufer, pp. 150–155.

<sup>460</sup> Hooper, pp. 191–193.

<sup>461</sup> Dioscorides, V.170–177.

<sup>462</sup> Hooper, p. 192.



type from China, which was also eaten by pregnant women. He also notes ‘*ṭin ghazāwī*’ and other substances.<sup>463</sup>

**PU:** Different kinds of clay figure in 5 M.M. lists (Armenian Earth, T-S Ar.39.451 [2]; T-S Ar.43.317; T-S AS 184.234l; T-S AS 184.321; [ṭin miṣri] T-S NS 306.117) and in 10 prescriptions: for hallucinations (Armenian Earth, T-S 16.291), for swellings (clay [ṭin ‘uṣāra] and white clay, T-S NS 194.70), for unknown uses (earth, T-S 13J6.14; Armenian Earth, T-S K25.212; T-S Ar.30.65; T-S AS 155.365; T-S NS 327.97; T-S 13J6.14; Cyprus clay, T-S NS 151.52), and in an alchemical astrological preparation (T-S 8J14.3).

**TU:** Armenian earth is recommended in recipes for the treatment of weeping discharge from the eye [according to Isaacs, from ‘Alī b. ‘Īsā’s *Tadhkirat al-kaḥḥālīn*—third discourse, chapter 27, cf. ed. Hyderabad, pp. 368–369] (T-S Ar.11.10) and inflammatory swellings of the breast, found in chapter 15 of an unknown book (T-S Ar.40.171). It also appears as a simple in a recipe for unknown uses (T-S K25.212r). Khurasani clay features in prescriptions for the management of diarrhoea (T-S Ar.41.104). Roman clay appears in ‘Alī b. ‘Īsā’s *Tadhkirat al-kaḥḥālīn*, third discourse, chapter 27 [see ed. Hyderabad] as a cure for drying wounds (T-S Ar.11.6), as simple in lists of *materia medica* (Or. 1081. J60), and in a recipe for unknown uses (T-S AS 176.494r). Sigillated earth is mentioned in recipes for the treatment of epilepsy, intestinal ulcer, colic, kidneys and bladder disease, and tenia of the scalp (T-S AS 179.302). Clay appears in a lexicon of *materia medica* (T-S AS 141.49).<sup>464</sup>

**OMU:** According to al-Kindī, ‘*turāb*’ is a component in a medication to treat roseola.<sup>465</sup> Maimonides states that ‘*ṭin he-ḥatum* [Hebrew]’ causes vomiting in cases of poisoning.<sup>466</sup> Red clay from Cyprus was used as a component in a medication for contracting the glans.<sup>467</sup> Different kinds of clay were used for medicine in the medieval Levant.<sup>468</sup>

**TM:** The Jews of Iraq used several types of ‘*turāb*’ (earth) and ‘*Kal*’ (clay) to remove bunions and treat wounds.<sup>469</sup> Other types of clay were used

<sup>463</sup> Ibid. Cf. Laufer, pp. 150–155. In connection with Sigillated earth, see also Thompson, Art, pp. 43–58.

<sup>464</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>465</sup> al-Kindī, no. 23. In connection with the toxicity of clay types see al-Biruni, II, 90.

<sup>466</sup> Maimonides, Poisons, p. 106. The editor comments that the effectiveness of the use was proven. It was also used in modern times. See *ibid.*, p. 159.

<sup>467</sup> Maimonides, Sexual, 8:10.

<sup>468</sup> Lev, Clay.

<sup>469</sup> Ben-Yakov, pp. 211, 266.

for various medical treatments.<sup>470</sup> In India and in eastern countries over 40 different kinds of clay were used for food and medicine, for example, against diarrhoea, cholera, and pains. In these countries it was the custom to feed pregnant women and children with earth to strengthen their bodies and their medical condition.<sup>471</sup>

**TAI:** Ibn al-Bayṭār lists eight types of earth and clay that are used in medicine. In his entry ‘turāb ṣaydā’ he describes earth that originated in the mountains of Sidon in al-Shām that was used for the speedy and efficient knitting of fractures and to cure headaches.<sup>472</sup> al-Uthmānī, the judge and governor of Safed who described the wonders of the area, notes that in the district of al-Shaqīf (southern Lebanon) one could find the ‘binding clay’ which was usually placed in bottles and used for drinking by humans, horses, and fowl to knit broken bones, and that they even ‘send these bottles to faraway countries.’<sup>473</sup>

## Clove

*Eugenia caryophyllata* (Myrtaceae), **A: qaranful**

**D&H:** The clove tree is an Asian evergreen that grows up to 10–13 metres high. Its bark is hard and gray, its leaves are narrow and slightly pink when young, and then they turn green. The flower buds contain a fragrant oil.<sup>474</sup> The clove tree was cultivated in the early periods of Asian history mainly for the flower buds, which were plucked and dried.<sup>475</sup> Cloves as well as pepper, cinnamon and nutmeg are among the first spices mentioned in Indian and Chinese literature.<sup>476</sup> The etymological source for the name ‘clove’ is the French ‘clou’, meaning nail (the Hebrew term for clove, ‘tziporen’, likewise means fingernail). Historical evidence for the use of cloves can be found as early as the 3rd century BCE in China and as an imported substance in the 2nd century CE in Alexandria. By the 4th century the clove was a well-known spice in Europe, and in the 8th century it became an important commodity in international east-west

<sup>470</sup> References: *Ibid.*, p. 719. Description and details: pp. 501–502.

<sup>471</sup> Hooper. In connection with medical influences see especially pp. 269–270; Laufer.

<sup>472</sup> Ibn al-Baytar, *al-Jami*, I, 147; Leclerc, no. 409.

<sup>473</sup> Blanc, p. 365; Lewis, p. 481.

<sup>474</sup> Singh, p. 227.

<sup>475</sup> Zohary, p. 455.

<sup>476</sup> On the history of cloves and its various names see in detail: Singh; Maimonides, *Regimen*, p. 97.

trade. al-Qazwīnī provides us with interesting data, noting that the clove is a tree that grows on certain Indian islands and its fruits are similar to the jasmine, though darker in colour. al-Qazwīnī adds that the islanders boiled the fruit before they exported it to prevent others from cultivating the tree elsewhere.<sup>477</sup>

**PU:** Clove figures in 9 lists of *materia medica* (T-S Ar.30.274; T-S Ar.34.341; T-S Ar.35.252; T-S Ar.35.328; T-S Ar.35.366; T-S Ar.43.6; T-S Ar.43.315; T-S AS 177.9; [ḥaṭab, T-S Ar.34.341) and in 6 prescriptions for unknown uses (T-S Ar.34.159; T-S Ar.35.59; T-S Ar.39.184; T-S Ar.43.338; T-S AS 155.365; T-S AS 182.242).

**TU:** Clove is mentioned in lexica of *materia medica* (T-S Ar.39.375), one noting the name Abū Ishāq al-Kūhīn (T-S Ar.35.326) and another dealing with pathological conditions such as heat, dryness, and black and red bile (T-S AS 111.22). It is also found in recipes for unknown uses (T-S AS 169.282), one of which is attributed to Galen (T-S NS 224.226r) and another, according to Isaacs, is taken from al-Kindī's *Kitāb kimmīyā al-ʿitr* (The book of the chemistry of perfume; T-S Ar.41.29). Clove was used for the treatment of coughs and colds (according to Galen and Ibn Māsawayh) (T-S Ar.11.11).<sup>478</sup>

**OMU:** al-Kindī describes intensive use of the clove in medicinal preparations to freshen the breath and treat the gums and stomach disorders.<sup>479</sup> Maimonides reports different medicinal applications of clove as a component in a general remedy that also includes pomegranate seeds and sugar.<sup>480</sup> Elsewhere he quotes al-Tamīmī who asserts that the clove is very useful as a cure for hysteria, and epilepsy, and as a component in a remedy used to treat heart palpitations.<sup>481</sup> Maimonides also states that it is a component in an aphrodisiac pill used to stimulate erection and enhance sexual pleasure.<sup>482</sup> Benevenutus lists clove among the substances in his 'Jerusalem electuary' which he prescribes for curing cataracts. Other substances in this remedy are honey, beaver testicle glands, saffron, and coconut.<sup>483</sup> al-Qazwīnī quotes Ibn Sīnā, who states that the clove sweetens the breath, improves eyesight, and prevents the loss of consciousness. al-Qazwīnī also writes that the clove is effective against

<sup>477</sup> al-Qazwini, p. 299.

<sup>478</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>479</sup> al-Kindi, nos. 3, 106, 108, 152, 213, 225–226; Cf. al-Biruni, I, p. 265; II, pp. 101–102.

<sup>480</sup> Maimonides, Answers, 21:6.

<sup>481</sup> Maimonides, Aphorisms, 21:96.

<sup>482</sup> Maimonides, Sexual, Introduction, 15.

<sup>483</sup> Benevenutus, p. 37. On the source and its problematics see my introduction.

nausea, and that its scent strengthens the brain and heart, and cheers one up.<sup>484</sup>

**TAI:** In a Genizah letter dated 1045 CE a Jewish Cairene merchant tells his partner in Jerusalem of a purchase of the expensive substance ‘qirfat qaranful’, identified as clove (DK XV).

Clove was an important commodity mentioned in many fragments, mainly concerning 11th-century trade and commerce at cities such as Cairo, Alexandria, Mahdiyya, Qayrawān, Palermo, and Tripoli.<sup>485</sup> The ‘girofle’ (clove) features as merchandise that was taxed in the Crusader Kingdom of Jerusalem during the 13th century,<sup>486</sup> and it is also listed among the substances exported to Europe.<sup>487</sup> This trade continued well after the Crusaders left the Levant. For example, clove and other spices are mentioned as goods bought by a Venetian trader in 15th-century in Ramlah.<sup>488</sup> Clove is one of the delicate spices, light in weight and costly, that were transported overland. The economic historian Ashtor estimates that its price in the Levant was low, so European merchants found it worthwhile to buy it there and transport it to their countries.<sup>489</sup>

## Coral

### A: bussad<sup>490</sup>

**D&H:** A class of animals belonging to the Coelenterate system. The English translation of the scientific name is ‘live flowers’. Most of the species build up as colonies of polyps with a calcite skeleton. One of the most used species in the past and today is *Tobipora musica* (see figure 26). Coral was known in earlier periods and in different cultures, and was used for its beauty and in the manufacture of jewelry. Coral is mentioned in the Bible: “almog trees” (I Kings, 10:11), and in rabbinical lore it is sometimes given the names “kasita” and “koralin” (Jer. Talmud, Shabbat, 7b). Dioscorides describes coral (*korallion*) as like a stony tree because of its combined mineral and plant nature, noting that

<sup>484</sup> al-Qazwini, pp. 229–230. Cf. Ibn Sina, pp. 416–417.

<sup>485</sup> Goitein, Society, I, p. 152, III, p. 202; Gil, Kingdom, 1, p. 565, IV, p. 932 (references to 11 fragments), also see indices.

<sup>486</sup> Assises, p. 174.

<sup>487</sup> Pegolotti, p. 63.

<sup>488</sup> Ashtor, Levant, p. 290. In detail: Ashtor, Spices.

<sup>489</sup> Ashtor, Levant, p. 33.

<sup>490</sup> For more names see Maimonides, Glossaire, nos. 45, 227; *El*, V, p. 556; Plants & Animals, IV, 220.

it is used as a medicine against diarrhoea and against problems of the spleen, as a cooling and cleansing drug, and as a medication against haemorrhage.<sup>491</sup> Levey notes that in early times it was mainly used to treat problems of urination, to extend menstruation, and as an antidote against poisons.<sup>492</sup>

**PU:** Coral figures in 2 lists of *materia medica* (T-S Ar.35.327; T-S NS 305.69) and in 4 prescriptions: for dental problems (T-S AS 182.77) and unknown uses (T-S Ar.43.338 [2]; T-S AS 179.259; T-S NS 306.48).

**TU:** Coral is mentioned in a medical book's recipe for the treatment of obstruction, wind, diarrhoea, pleurisy, and trembling (T-S AS 179.110).<sup>493</sup>

**OMU:** According to al-Kindī, 'basad' is an ingredient in medications for eye diseases, while red coral serves to treat tooth decay, to strengthen the teeth, and to prevent bad breath.<sup>494</sup> al-Ghāfiqī asserts that 'basad' is used to dry tears and to strengthen the heart.<sup>495</sup> Maimonides states that coral is a component in a medication compounded by Ibn Sīnā to strengthen the heart. He recommends its use in response to a medical problem referred to him by the Egyptian ruler, the son of Saladin. Coral was considered as a cold and dry drug.<sup>496</sup> Ibn al-Bayṭār describes coral in his entry 'basad' and gives its synonyms. Among its medical uses he lists: treatment of wounds, stopping haemorrhages, curing eye diseases, relief of spleen pains, and opening obstructions in the urinary tract. It was also used to clean the teeth, to strengthen the gums, and even to cure deafness.<sup>497</sup> al-Qazwīnī notes in his entry 'basad' that the source of the substance is in the coral reefs and it exists in various colours: white, red, and black. Among its medical uses are stopping bleeding, strengthening the eye, strengthening the heart, and easing urination; it is recommended for the treatment of mental illnesses.<sup>498</sup>

**TM:** The species *Tobipora musica* was among the most frequently used substance in the medieval Middle East and it is still sold in the region's

<sup>491</sup> Dioscorides, V. 139.

<sup>492</sup> al-Kindi, p. 243, no. 38.

<sup>493</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>494</sup> al-Kindi, nos. 103, 156, 157. Cf. Ibn Sina, p. 276.

<sup>495</sup> al-Ghāfiqī, no. 182.

<sup>496</sup> Maimonides, Answers, 19:3; Maimonides, Aphorisms, 21:73.

<sup>497</sup> Ibn al-Baytar, al-Jami, I, pp. 93–94; Leclerc, no. 282. Cf. al-Antaki, p. 75.

<sup>498</sup> al-Qazwini, p. 187.

markets.<sup>499</sup> Yemenite Jews used dry and crushed red coral, called ‘marjan’, to treat eye infections.<sup>500</sup> The Jews of Iraq took ‘marjan’ to strengthen the body, the eyesight, the head, and internal organs, mainly the heart.<sup>501</sup> In Iran and Iraq coral from the Red Sea, from the Persian Gulf, and from the Arabian Sea was used for medical purposes. Coral was a strengthening drug, a substance used against vomiting and stomach acidity, and served in the treatment of epilepsy, dysentery, and spitting of blood.<sup>502</sup> In Pakistan and in Far Eastern countries coral is still used in TM to treat eye and ear diseases, to strengthen the teeth and gums, and to treat leprosy, depression, madness, asthma, and other illnesses.<sup>503</sup> As a result of various research studies it is known today that some of corals have substances that serve for medical purposes. In the Red Sea, for example, *Alcyonium depressum* and *Euplexaura braueri* are found, whose tissues contain prostaglandin substances in their tissues, which are widely used in medicine.<sup>504</sup>

**TAI:** Coral was imported to Egypt from North Africa (mainly Tunisia) and Europe. It was traded and sold at the cities and ports of Cairo, Alexandria, Mahdiyya, and those of Sicily, and it was used as ornaments.<sup>505</sup> From trade documents it appears that coral was merchandise much in demand in Egypt, in the Crusader Kingdom of Jerusalem during the 12th and 13th centuries, and even during the later Middle Ages. This commerce was dominated by traders from Genoa and Provence.<sup>506</sup> al-Qazwīnī writes in the relevant entry that coral originated in the Red Sea, and he details the process of its extraction. According to him, coral was used in chemical industries as well as in medicine, mainly for treatment of the eyes.<sup>507</sup>

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<sup>499</sup> Lev & Amar, Ethnic; Lev & Amar; Lev & Amar, Jordan.

<sup>500</sup> Reiani, no. 169. See *ibid.* for proposed identification.

<sup>501</sup> Ben-Yakov, pp. 352, 361.

<sup>502</sup> Hooper, p. 194.

<sup>503</sup> Vohora & Khan, pp. 46–47. Cf. al-Kindi, p. 243, no. 38.

<sup>504</sup> Plants & Animals, IV, pp. 223, 225.

<sup>505</sup> Goitein, Society, see indices; Gil, Kingdom, I, p. 561; IV, p. 934 (appears in about 60 fragments according to the index).

<sup>506</sup> Ashtor, Levant, p. 52. For sources, see note 135.

<sup>507</sup> al-Qazwini, p. 208.

## Coriander

*Coriandrum sativum* (Apiaceae), **A: kuzbara**<sup>508</sup>

**D&H:** Strongly aromatic annual (up to 50 cm.), has finely cut upper leaves, small white or pink flowers, and small round seeds that are used as condiment and drug.<sup>509</sup> Coriander is mentioned in the Bible in the description of the manna in Sinai (Exodus 16:31), and 'kusbar' also appears in rabbinical sources as a food plant and a condiment identified with wild coriander.<sup>510</sup> The plant was known in Ancient Egypt: it is mentioned in the Ebers Papyrus of the 16th century BCE, and its seeds were found in graves in Egypt.<sup>511</sup> Classical physicians describe its use and Pliny states that Egyptian coriander is the best. Dioscorides advises using *koriannon* to cure diseases and infections of liver, stomach, skin, and eyes.<sup>512</sup>

**PU:** Coriander figures in 3 lists of *materia medica* (T-S NS 306.117; T-S AS 153.51; T-S NS 224.65) and in 6 prescriptions: for hallucinations (T-S 16.291) and topical application (T-S Ar.30.99); the Levantine kind (shāmiyya) was used to treat weak eyesight and migraine [Maimonides] (T-S Ar.30.286). It is also mentioned in prescriptions for unknown uses (T-S Ar.38.29; T-S Or.1081.1.66), one of which, a potion, specifies the Levantine kind (shāmiyya) (T-S AS 151.56).

**TU:** Coriander was mentioned in medical books in several recipes for the treatment of: eye complaints such as redness, itching and excessive lacrymation (T-S Ar.39.228), treatment of diarrhoea [powder] (T-S Ar.40.179r), inflammatory swellings of the breast, found in chapter 15 of an unknown book (T-S Ar.40.171). It was also mentioned in a recipe for unknown uses (T-S NS 224.62).<sup>513</sup>

**OMU:** al-Kindī describes the use of coriander to treat headaches and fever.<sup>514</sup> According to Maimonides, 'kusbar' was a component in a medication that he called 'the cold drink' which was effective in strengthening the heart. The moist plant served as a compress (bandage) to treat the bee or wasp stings. All parts of the plant were considered a hot and dry drug.<sup>515</sup> al-Qazwīnī cites various physicians in informing us that the

<sup>508</sup> Issa, p. 58, no. 3.

<sup>509</sup> Chevallier, p. 193; see figure 27.

<sup>510</sup> Feliks, World, p. 180; Low, III, 441–447; Felik, Kilayim, pp. 62–63.

<sup>511</sup> Bryan.

<sup>512</sup> Dioscorides, III.71.

<sup>513</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>514</sup> al-Kindi, nos. 21, 211.

<sup>515</sup> Maimonides, Answers, 19:2; Maimonides, Poisons, p. 125; Maimonides, Aphorisms, 21:68.

whole plant served to accelerate childbirth and was given to a woman in labour; the incense made from it kept snakes and scorpions away from the house. He also quotes Ibn Sīnā as stating that the fresh plant puts one to sleep and blinds, while the dry plant causes a decrease in sexual desire. The plant extract with the addition of milk is calming, and a large amount causes the mind to be confused. The seeds are effective against wasp stings.<sup>516</sup> Dāwud al-Anṭākī adds that the plant stimulates the appetite, prevents vomiting, strengthens women who have miscarried, and cures dysentery, variola, jaundice, and cholera.<sup>517</sup>

**TM:** Wild coriander is used to cure conditions such as flatulence and spasms in the digestive tract. Chinese medicine uses it to cure dysentery, measles, and other diseases.<sup>518</sup> In Egypt, Iraq, and Iran it is also used as a diuretic drug, to stimulate menstruation, relieve headaches and toothaches, and arouse sexuality.<sup>519</sup> Similar uses are found among the Jews of Iraq and the Yemen.<sup>520</sup> The plant and particularly its seeds are used as a condiment. The ethereal oil extracted from them serves as a component in the wine and spirits, tobacco, cosmetics, and perfume industries.<sup>521</sup> The main component in the oil is d-linalol.<sup>522</sup>

**TAI:** In the Mamluk period coriander was a summer crop in the al-Shām region (Greater Syria).<sup>523</sup> It was also used intensively as part of the diet of the members of the Genizah society,<sup>524</sup> and is mentioned among other spices and medicinal substances in a price list.<sup>525</sup>

## Costus

Arabian costus, *Costus speciosus* (Costaceae), **A:** **quṣṭ**, **quṣṭ**<sup>526</sup>

**D&H:** Perennial plant with white flowers and root, which was used for medicine and for the production of perfume. It grows wild in the Himalayas. The plant was one of the ingredients for incense in the Jewish

<sup>516</sup> al-Qazwini, p. 259. Cf. Ibn Sina, p. 348.

<sup>517</sup> al-Antaki, p. 272. Cf. Ibn al-Baytar, al-Jami IV, 66–70; Leclerc, no. 1926.

<sup>518</sup> Plants & Animals, XII, p. 93; Uphof, p. 153.

<sup>519</sup> Ducros, p. 199; Hooper, p. 106; al-Rawi & Chaakravarty, p. 30 with the content of active substances.

<sup>520</sup> Reiani, no. 34; Ben-Yakov, assembled references on p. 721.

<sup>521</sup> Plants & Animals, XII, p. 93; Uphof, p. 153.

<sup>522</sup> Plants & Animals, XII, p. 93.

<sup>523</sup> al-Nuwayri, VIII, 257.

<sup>524</sup> Goitein, Society, IV, p. 232.

<sup>525</sup> Ibid., II, p. 270.

<sup>526</sup> Issa, p. 58, no. 15; Maimonides, Glossaire, no. 338.



temple (Bab. Talmud, Kerithoth 6a) and is mentioned frequently in classical and medieval Arabic medical literature.

**PU:** Costus figures in 12 lists of *materia medica* (T-S Ar.30.274; T-S Ar.35.82; T-S Ar.35.327; T-S Ar.43.6; T-S Ar.51.53; T-S AS 145.365; T-S AS 176.151; T-S AS 179.132; T-S AS 181.193; T-S AS 184.187; T-S AS 184.234; T-S NS 306.106) and in 7 prescriptions: for eye diseases (T-S NS 218.21; Indian kind, T-S AS 159.241), chewing gum (T-S Ar.42.20), and for unknown uses (T-S Ar.35.229; T-S AS 145.365; T-S NS 265.62; T-S Or.1081.J.39)

**TU:** Costus features in several prescriptions in medical books: for the treatment of stones in the bladder (T-S K14.18; T-S K14.5), entropion and roughness of the eyelids (T-S Ar.39.167), quartan fever, burning black bile, and phlegm (T-S NS 306.74), convulsion and tetany, fever, and colic (T-S Ar.40.162), epilepsy, internal ulcer, colic, kidney and bladder diseases, (T-S AS 179.302), coughs and colds (one prescription is attributed to Galen and another is an oxymel attributed to Ibn Māsawayh: T-S Ar.11.11), and a recipe for costus pastes taken from Ibn Sīnā's *al-Qānūn* (cf. ed. Bulaq, III:333; T-S Ar.39.473). It is also mentioned in a quasi-medical fragment against satanic and *jinnī* (demonic) intentions (T-S Ar.39.132) and in herbal remedies for pains and swellings (T-S Ar. 40.149). Costus is found in a lexicon of *materia medica* (T-S Ar.39.375; T-S AS 167.17; T-S AS 167.18).<sup>527</sup>

**OMU:** Ibn Sīnā states that the plant is diuretic, expel worms, an aphrodisiac, eases pains in the wombs, treats snakebite (as a drink), skin diseases, and chest pains.<sup>528</sup> Ibn al-Bayṭār asserts that it is a warming simple, and treats various pains; he cites other Arab physicians regarding its medical qualities in the treatment of liver problems, headache, earache, fevers, skin diseases, and kidney stones.<sup>529</sup>

**TAI:** Costus was widely traded in the middle ages,<sup>530</sup> and was exported from Egypt to Sicily.<sup>531</sup>

<sup>527</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>528</sup> Ibn Sīnā, I, p. 420.

<sup>529</sup> Ibn al-Bayṭār, al-Jami, IV, pp. 18–19.

<sup>530</sup> Goitein, Society, IV, p. 932, see index for 13 different fragments.

<sup>531</sup> Gil, Kingdom, I, p. 564.

## Cumin

*Cuminum cyminum* (Apiaceae), **A: kammūn**<sup>532</sup>

**D&H:** Cumin is a slender, half-hardy annual with dark green leaves divided into linear segments. It bears white or pink flowers, and its ovoid seeds are used in medicine and as a spice.<sup>533</sup> The plant is a cultivated crop in use since early times. Evidence of this is found in the lists of medicinal plants in the Ebers Papyrus (1550 BCE), in the Bible (Isaiah 28:25–27), and even in the New Testament (Matthew 23:23). According to Pliny, it was ‘the best of all condiments’. According to Dioscorides, the *Kuminon emeron* is an effective medication to treat the stomach, infections, scorpion stings, and snakebite.<sup>534</sup> In the age of the Mishna cumin was an agricultural crop in the Land of Israel and was also used for curative purposes, mainly to stop bleeding (Mishna, Shabbat, 19:20).<sup>535</sup>

**PU:** Cumin figures in 4 lists of *materia medica* (T-S AS 179.259; T-S AS 182.222; T-S NS 164.12; T-S NS 306.117 [2]; kammūn darmānī, T-S AS 184.234) and in 2 prescriptions: for cough (T-S 8J15.20) and for unknown uses (T-S Ar.39.184).

**TU:** Cumin appears in medical books in recipes for the treatment of stomach and liver complaints (T-S Ar.10.5), stomachic confections (T-S Ar.40.90), colic (T-S Ar.43.142), and diseases affecting the eyelids (eye-drops; T-S NS 222.18). Black cumin appears in a recipe for the treatment of eye complaints such as redness, itching, and excessive lachrymation (kohl and collyria; T-S Ar.39.228). Cumin of Kirmān is found as a simple in a lexicon of *materia medica* (T-S Ar.39.184), and roasted cumin is in a recipe (powder) to treat diarrhoea and strengthen the stomach muscles (T-S Ar.40.180). Royal cumin was used for to treat umbilical hernia and incessant crying in children (T-S Ar.40.160).<sup>536</sup>

**OMU:** al-Kindī describes the use of the oil of cumin seeds to treat joint infections and to cure intestinal diseases.<sup>537</sup> Maimonides notes many medical uses of the plant, especially its seeds: a component in a medication for ‘the bite of the snake’, a component in an enema, and a medicine

<sup>532</sup> Maimonides, Glossaire, nos. 193, 195, 259, 365; Issa, p. 62, no. 18; Dinsmore & Dalman, no. 804.

<sup>533</sup> Bown, p. 114.

<sup>534</sup> Dioscorides, III.69.

<sup>535</sup> In detail: Feliks, World, p. 182.

<sup>536</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>537</sup> al-Kindī, nos. 32, 139, 216. Additional uses and folklore are given by al-Biruni I, pp. 282–283.

for heartburn. In another connection Maimonides mentions 'desert cumin'—a component in a medication to harden the penis.<sup>538</sup> al-Qazwīnī cites Ibn Sīnā in stating that its juice cleanses the face; excessive eating caused pallor; when boiled with vinegar it stops nosebleed; and its extract improves eyesight.<sup>539</sup> Dāwud al-Anṭākī describes medical uses of cumin such as: curing chills, reducing swellings, relieving breathing difficulties, regulating bowel movements, treating diseases of the intestines and the eyes, and easing toothache.<sup>540</sup>

**TM:** The ethereal oil produced from the fruit, as well as the fruit itself, serve to accelerate digestion, prevents spasms, absorb gases, causes urination, and increase sexual desire.<sup>541</sup> The Bedouin of the Negev use cumin seeds as sauce, to improve breastfeeding, to treat stomach pains, to reduce wind, and to improve digestion.<sup>542</sup> In Egypt and Iran the seeds of the plant are used in modern times as a carminative, to lessen labour pains, and to accelerate menstruation.<sup>543</sup> In Iraq the plant is used, among other things, as a stimulating drug, a carminative, an astringent, and for relief during intestinal infection.<sup>544</sup> Among the Jews of Yemen and Iraq cumin was a carminative drug and a widely used diuretic. It also served to regulate bowel movements and the liver, to strengthen the lungs, and to treat breathing difficulties, infections of the womb, haemorrhage, skin diseases, and mumps.<sup>545</sup> Similar uses are known in Europe as well.<sup>546</sup>

**TAI:** According to Genizah fragments, cumin was traded at Cairo, Alexandria, Qayrawān and other Mediterranean ports, including one in Syria.<sup>547</sup> According to the maritime laws of Venice (1233), cumin was merchandise imported from Syria and from the Levantine region to Europe.<sup>548</sup> Ibn al-Bayṭār notes the existence of three species of 'kammūn kirmānī': Persian, Syrian, and Nabataean. In the al-Shām region the plant was grown for sauce and for curative purposes.<sup>549</sup>

<sup>538</sup> Maimonides, Poisons, pp. 111, 116; Maimonides, Aphorisms, 9:47; Maimonides, Sexual, 13:1.

<sup>539</sup> al-Qazwini, p. 259. Cf. Ibn Sina, pp. 341–342.

<sup>540</sup> al-Antaki, p. 275. Cf. Ibn al-Baytar, al-Jami, IV, 81–82; Leclerc, 1967.

<sup>541</sup> Plants & Animals, XII, p. 93, with content of active substances.

<sup>542</sup> Abu-Rabia, p. 17.

<sup>543</sup> Ducros, p. 202; Hooper, p. 109.

<sup>544</sup> al-Rawi & Chaakravarty, p. 33, with content of active substances.

<sup>545</sup> Rejani, no. 37. Compare Ben-Yakov. Assembled references on p. 723.

<sup>546</sup> Grieve, p. 243.

<sup>547</sup> Gil, Kingdom, III, p. 1, no. 304; IV, p. 186, no. 660. see also T-S Ar.5.1.

<sup>548</sup> Venice Laws.

<sup>549</sup> Ibn al-Baytar, al-Jami, IV, pp. 81–82; Leclerc, no. 1967.

## Dodder of Thyme

Lesser or Heath Dodder, *Cuscuta epithymum* (Convolvulaceae), **A: afithimūn**<sup>550</sup>

**D&H:** There are 170 varieties of dodder, of which eleven grow in Israel. Dodder of thyme is a parasitic vine which entwines itself around plants of the Mediterranean region such as the headed thyme, prickly burnet, and the local stachys in Israel. Its stems are threadlike and leafless, and do not contain any chlorophyll. It has small flowers and tiny seeds.<sup>551</sup> Dodder of thyme is known throughout the Near East and is mentioned in medical writings in Mesopotamia mainly as a remedy for stomach disorders.<sup>552</sup> Dioscorides notes the use of *Epithumon* especially for treating mucus and black bile.<sup>553</sup>

**PU:** Dodder of thyme figures in 8 prescriptions: for hallucination (T-S 16.291), and unknown uses (T-S Or.1081.J.39; T-S NS 327.97; T-S K25.212; T-S AS 155.365; T-S AS 177.417), one notes *afithimūn iqrīṭī* (Cretan dodder; T-S Ar.30.65) and another *afithimūn miṣrī* (Egyptian dodder; T-S Ar.40.141).

**TU:** The plant is mentioned in general medical books (T-S Ar.40.60; T-S Ar.40.85; T-S Ar.40.91; T-S Ar.43.265; T-S Ar.44.102; T-S AS 177.318; T-S AS 177.417) and in books on fevers (T-S Ar.41.12), toxicology (T-S Ar.41.116), palpitation (T-S Ar.41.47), *materia medica* (T-S Ar.40.141; T-S Ar.45.33), and dermatology (T-S NS 90.60), and in pharmacopoeias (T-S Ar.41.114; T-S NS 306.54; T-S NS 306.172; T-S Or.1081.J.39).<sup>554</sup>

**OMU:** al-Tamīmī reports the medicinal use of ‘aftimun’ in connection with Jerusalem.<sup>555</sup> Ishāq ibn Sulaymān (Isaac Israeli) noted that the ‘afithimūn’ is called ‘al-za‘ātira’ by the people of Greater Syria, and that Jerusalem is one of the best sources for its supply.<sup>556</sup> According to al-Kindī, ‘afithimūn’ was a component in a preparation for reducing fever.<sup>557</sup> Al-Bīrūnī relates its use for treating influenza, spasms, epilepsy,

<sup>550</sup> Maimonides, Glossaire, p. 21, no. 23; p. 60, no. 186; Serapion, no. 181; Issa, p. 63, no. 6; Leclerc, no. 1161.

<sup>551</sup> Plants & Animals, XI, p. 41; Feinbrun-Dothan, p. 524.

<sup>552</sup> al-Kindī, p. 233, no. 18.

<sup>553</sup> Dioscorides, IV.179.

<sup>554</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>555</sup> al-Tamimi, p. 19.

<sup>556</sup> al-Israili, p. 390.

<sup>557</sup> al-Kindī, no. 113; al-Biruni, II, pp. 73–74.

and depression.<sup>558</sup> In his entry ‘afithīmūn’ Ibn al-Bayṭār describes the medicinal uses of the plant according to various physicians. One of them states that Jerusalem is a good source for this medication; he lists the following medicinal uses of dodder of thyme according to classical and Arab physicians: treating various types of mucus (bile), nervous and mental disorders, muscular cramps, swellings, and intestinal worms.<sup>559</sup> In a medical response to Sultan al-Afḍal, Maimonides notes that the dodder-‘khāshā’ is a component of a medication for heart disease invented by Ibn Sinā, and he recommends its use. In another letter Maimonides does not recommend the use of dodder-‘afithīmūn’ jam because it causes the ‘purging of the intestines and their drying out.’ From other references it seems that the ‘afithīmūn’ served as a light purgative and was a hot and dry drug.<sup>560</sup> Saladino d’Ascoli mentions the ‘ēpitimu’ as a medicine that should be stocked in every pharmacy and that retains its medicinal effectiveness for the duration of a year.<sup>561</sup>

**TAI:** The plant was in demand in Egypt mainly for its medicinal uses, and was imported from Crete.<sup>562</sup>

## Donkey

Ass, *Equus asinus* (Equidae), **A:** **himār**

**D&H:** The wild African ass was apparently domesticated and became a beast of burden long before the horse. In Egypt evidence was found of its domestication in the sixth millennium BCE.<sup>563</sup> In the Bible the Hebrew word for ass is a proper name (Genesis 33: 19), and the frequent references to it show that it was very widely known. The ass was used as a means of transport at all social levels (Exodus 4: 20; Judges 5: 10), and the Prophet Zechariah even foretold that the King the Messiah would come to Jerusalem riding on an ass (Zechariah 9:9)—an image that influenced Jews and Christians. The Sages described using the urine of the ass (by drinking) for the treatment of anemia (Bab. Talmud, Bekhorot, 71b).

**PU:** Different products of the donkey figure in one list of *materia medica* (T-S Ar.35.252) and in 7 prescriptions: for cleaning or treating the teeth

<sup>558</sup> al-Biruni, I, pp. 35–36; Ibn Sina, pp. 201–202. Cf. al-Ghafiqi, no. 80.

<sup>559</sup> Ibn al-Baytar, al-Jami, I, pp. 40–41; Leclerc, no. 112.

<sup>560</sup> Maimonides, Answers, 3:13, 19; Maimonides, Aphorisms, 17:40; 21:80.

<sup>561</sup> Saladino, pp. 82, 112.

<sup>562</sup> Goitein, Society, I, p. 47.

<sup>563</sup> Plants & Animals, XII, p. 245.

(T-S Ar.39.451), muscles pain (T-S NS 108.139), an invalid's diet (T-S Ar.42.189), and to stop bleeding (fresh donkey faeces, T-S NS 139.31 [2]). It is also mentioned in recipes for unknown uses (T-S NS 305.76[2]) and as pills (T-S AS 146.197). Donkey milk jam (*laban athān murabbā*) is noted as a simple in a recipe for unknown uses (T-S NS 297.17).

**TU:** Products of donkeys appear mentioned in general medical books (T-S Ar.43.231; T-S Or.1080 13.33) and in pharmacopoeias (T-S AS 179.60; T-S NS 222.22).<sup>564</sup>

**OMU:** al-Kindī tells about the use of asses' milk in medical prescriptions to treat diseases such as: epilepsy, haemorrhoids, eye disease, and excess lachrymation.<sup>565</sup> Maimonides relates, from his own experience, that the meat of the wild ass strengthens the lungs<sup>566</sup> and notes the extensive use of asses' milk for dieting and medicine.<sup>567</sup> Ibn al-Bayṭār lists various types of asses and describes their medical uses.<sup>568</sup>

**TM:** The Bedouin in Sinai and the Negev use the dung and urine of the ass to treat wounds. The dung is also recommended against colds while the placenta of the ass serves as part of the treatment against tuberculosis. Asses' milk is used to cure stammering, and its meat is used for treating insanity.<sup>569</sup> The Jews of Iraq used asses' milk to treat eye disease,<sup>570</sup> and Yemenite Jews used the hooves of the ass, called 'odfor' as a disinfecting incense in cases of eye and tooth infections. The smoke of asses' dung served to cure burns.<sup>571</sup>

**TAI:** A vast amount of information regarding donkeys is found in the Genizah, especially regarding prices.<sup>572</sup>

<sup>564</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>565</sup> al-Kindī, nos. 127, 140, 142, 166, 170, 178. Cf. Ibn Sina, pp. 324–325.

<sup>566</sup> Maimonides, Regimen, 4:17.

<sup>567</sup> Maimonides, Aphorisms, 20:41, 42; 21:12; 25:10.

<sup>568</sup> Ibn al-Bayṭār, al-Jami, II, pp. 35–36; Leclerc, nos. 711–713. Cf. al-Antaki, pp. 129–130.

<sup>569</sup> Levey, Beduins, p. 86; Abu-Rabia, p. 23.

<sup>570</sup> Ben-Yakov, p. 183.

<sup>571</sup> Reiani, no. 159.

<sup>572</sup> Goitein Society, I, pp. 270–271; IV, pp. 263–265.

## Endive

Chicory *Cichorium intybus* (Asteraceae), **Other types:** *Cichorium endivia*, *Cichorium pumilum*. **A:** **hindabā'h**<sup>573</sup>

**D&H:** Chicory is an annual herbaceous plant, stiffly erect and branching with hairy stems and leaves. The leaves are split and the flowers are tongue-shaped, wide, and blue-petalled with large cluster heads (3–4 cm.) This is one among nine different species in the world. The cultivated variety is similar to the wild one, but it is customary to break off the cluster heads to thicken the roots. Another cultivated variety is grown in India.<sup>574</sup> In the Mishna 'olashim' are mentioned in connection with the laws for the sabbatical year and cross-fertilization. The reference is apparently to common chicory, which is one of the varieties that can be used as the bitter herbs required for the Passover meal.<sup>575</sup> Dioscorides distinguishes between the wild and the cultivated variety, which is called *endive* and was used as a remedy for the stomach, heart, and eyes and for scorpion stings.<sup>576</sup> The Talmud also describes the two varieties of chicory. Some of the Jewish medieval commentators identify this plant by its Arabic name 'hindaba'.<sup>577</sup>

**PU:** Various parts of endive figure in 11 lists of *materia medica* (T-S Ar.39.450; T-S AS 184.321; seeds, T-S Ar.35.366; T-S AS 179.56; T-S AS 182.99; T-S AS 184.234; T-S NS 224.62; T-S NS 264.86; T-S NS 279.57; root, T-S AS 179.80; T-S NS 264.86) and in 23 prescriptions: for an invalid's diet (root, T-S Ar.42.189); plaster for swelling (seeds, T-S AS 178.32); aphrodisiac (seeds, T-S NS 164.159); fever (seeds, T-S NS 306.177; T-S AS 155.277); liver (root peel, T-S Ar.39.274), weak eyesight and migraine (Maimonides; root peel, T-S Ar.30.286). It also appears in prescriptions for unknown uses (T-S Ar.20.16 [3]; T-S Ar.30.227; T-S Ar.51.76; T-S NS 327.97; T-S AS 155.365; T-S AS 162.186; seeds, T-S Ar.30.305; T-S Ar.34.239; T-S Ar.39.184 [2]; T-S Ar.40.141; T-S Or.1081.1.66; T-S 12.33; water, T-S NS J38) powder (root, T-S Ar.40.87[2]), jam (seeds, T-S AS 148.27) and in a family recipe (root, T-S NS 223.82–83, general as well as syrup and seeds [3]).

<sup>573</sup> Maimonides, Glossaire, p. 41, no. 114; p. 81, no. 285; Dinsmore & Dalman, no. 1032; Issa, p. 48, no. 12.

<sup>574</sup> Plants & Animals, XI, pp. 180–181. Description of cultivated varieties in Loewenfeld & Back, p. 97; Hill, p. 377; Uphof, p. 130.

<sup>575</sup> Mishna Pesachim 2,6; Feliks, Shevi'it, p. 168; Low, I, p. 287.

<sup>576</sup> Dioscorides, II.132.

<sup>577</sup> Discussion in Feliks, Yerushalmi, p. 94, n. 394.

**TU:** Endive is found in a tabulated medical work on the treatment of hectic and septic fevers, cancer, erysiples, soft and hard inflammatory swellings, and elephantiasis (T-S Ar.41.137). With myrobalan, squill, and rose water it was used to stop salivation (T-S NS 164.62v). It is also found in prescriptions for unknown uses in books (T-S AS 179.262; T-S AS 184.321). Endive seeds are listed in a prescription bearing the name Abū ‘Alī (T-S Ar.39.211r) and in a prescription for unknown uses (T-S Ar.39.355r). Endive water is an ingredient in a recipe for the treatment of eye complaints such as lippitude, inversion, and lice of the eyelids (T-S AS 179.235). Chicory is mentioned in a recipe for unknown uses (T-S AS 176.365; T-S AS 182.99r) and in one for the treatment of weakness of liver and bile corruption (T-S AS 172.7). Chicory seeds also appear in a recipe for unknown uses (T-S AS 162.185).<sup>578</sup>

**OMU:** According to al-Kindī, chicory was used as an ointment for the nose and for treating skin rashes and the stings of scorpions and spiders.<sup>579</sup> Al-Bīrūnī describes an unusual use of ‘hindabā’: as a component in a drugged drink, of which an overdose could cause death.<sup>580</sup> Maimonides states that the seed of ‘the “tarcascon,” which is a bitter herb,’ is a component in a preparation for foul breath,<sup>581</sup> and he recommends ‘hindibā’ as the best medicine for curing diseases of the liver and skin diseases.<sup>582</sup> al-Qazwīnī cites Ibn Sīnā describing the use of the plant to treat rheumatism, eye inflammation, white spots in the eye, scorpion or wasp stings, and malaria.<sup>583</sup> Dāwud al-Anṭākī in his entry ‘hindibā’ mentions uses such as curing malaria, fever, headache, jaundice, and problems of the liver, spleen, and kidneys. As a beverage, it strengthens the stomach, reduces swellings, and prevents inflammation of the eyes.<sup>584</sup>

**TAI:** al-Ghāfiqī cites many physicians in connection with various types of ‘hindabā’. Some attest that the plant was called ‘anṭūbiyā’ in Greater Syria.<sup>585</sup> Ibn al-Bayṭār in his entry ‘anṭūbiyā’ quotes Ibn Māsawayh stating that this is the ‘hindabā’ found in al-Shām.<sup>586</sup> The plant ‘hindabā’ is

<sup>578</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>579</sup> al-Kindi, nos. 42, 52, 54, 173–174.

<sup>580</sup> al-Biruni, II, p. 60.

<sup>581</sup> Maimonides, *Sexual*, 7:1. Maimonides says that this is one of the names for chicory of the desert.

<sup>582</sup> Maimonides, *Aphorisms*, 9:71, 106; 21:74.

<sup>583</sup> al-Qazwini, p. 264. Cf. Ibn Sina, p. 298.

<sup>584</sup> al-Antaki, p. 336. Cf. Ibn al-Baytar, *al-Jami*, IV, pp. 198–200; Leclerc, no. 2263; al-Biruni, I, p. 330.

<sup>585</sup> al-Ghafiqi, no. 263.

<sup>586</sup> Ibn al-Baytar, *al-Jami*, p. 66; Leclerc, no. 181.



listed among the crops grown in the al-Shām region during the Mamluk period.<sup>587</sup> Remains of cultivated chicory seeds were found in the Red Tower archaeological excavations (13th century) in the Sharon area.<sup>588</sup>

## Fennel

*Foeniculum vulgare* (Apiaceae), **A: shamār, rāzayāna**<sup>589</sup>

**D&H:** Tall (up to 1.5 m) aromatic perennial, has dark green feathery leaves, umbels of yellow flowers, and small oval seeds.<sup>590</sup> The origin of the scientific name *Foeniculum* is the Latin word for fodder. Pliny describes many uses of the plant, including counteracting mushroom poison and treating bites. Dioscorides too describes the *Marathon*, noting that it was a mild purgative that served to reduce fever and to treat problems of the stomach, the eyes, dog bite, snakebite, and menstrual irregularities.<sup>591</sup> Some plants mentioned in the Jewish Sages' writings have been identified with the common fennel (Mishna, Demai, 1:1,<sup>592</sup> Shevi'it, 9:1<sup>593</sup>). In the Middle Ages the plant was used for curative purposes and for witchcraft, and to prepare amulets.<sup>594</sup>

**PU:** Fennel figures in one list of *materia medica* (T-S Ar.39.307) and in 14 prescriptions: for weak eyesight and migraine (Maimonides; water and root peel, T-S Ar.30.286), haemorrhoids (T-S Ar.40.53), fever (T-S AS 155.277), and as an aphrodisiac (T-S NS 164.159). It is also mentioned in prescriptions for unknown uses (T-S Ar.34.150; T-S NS 305.75(76); T-S NS 306.41; T-S Ar.46.07; [kulüb-Maimonides] seeds, T-S Ar.41.81; water, T-S NS J38), as a simple in pills (T-S AS 146.197), powder (seeds, T-S Ar.40.87; root peel, T-S Ar.40.87), and the green kind in a family recipe (T-S NS 223.82–83).

**TU:** Fennel is found in medical books in prescriptions for the treatment of headaches and diseases of the brain (taken orally or applied to the forehead; T-S Ar.40.157), to cool the body (T-S Ar.41.80), for pains in the eye, dim vision and excessive lachrymation (eye ointment; T-S NS

<sup>587</sup> al-Badri, p. 175.

<sup>588</sup> Pringle, p. 187.

<sup>589</sup> Maimonides, Glossaire, no. 351; Dinsmore & Dalman, nos. 773, 774; Issa, p. 84, no. 11; Leclerc, nos. 265, 286, 1019, 1341.

<sup>590</sup> Chevallier, p. 210.

<sup>591</sup> Dioscorides, III.81.

<sup>592</sup> Low, III, pp. 460–465.

<sup>593</sup> Feliks, Shevi'it, p. 205, n. 9.

<sup>594</sup> Dafni, Edible, p. 118.

90.6v), and for topical uses (compound; T-S NS 163.94). It is also found in recipes for unknown uses (T-S NS 90.51v; T-S AS 178.225), one of which is a preparation of pills (T-S AS 164.197r). Fennel seeds are mentioned in remedies for children with umbilical hernia and incessant crying (T-S Ar.40.160), cold headache (T-S NS 164.75r), and prescriptions for unknown uses (T-S Ar.39.355r; T-S AS 170.136); fennel water was used in a recipe for unknown uses (T-S NS 326.41v).<sup>595</sup>

**OMU:** The physician Assaf reports the use of fennel to remove stones from the urinary tract and to cure the liver, the spleen, and the womb.<sup>596</sup> According to al-Kindī, fennel served in the treatment of swellings in children, the anus, mumps, ulcers, fever, and pains of the liver and intestines. It was also used in helping to fortify eyesight.<sup>597</sup> Maimonides asserts that 'fennel wine' is a component in a medication for the heart. Fennel was considered a food easily digested, and a hot and dry drug. The root of the fennel was defined as a mild drug that made one healthy and strong. Fennel seeds were a component in a medication against scorpion stings and in a concoction 'to benefit coitus'.<sup>598</sup>

**TM:** The Arabs of Israel and the Bedouins use fennel to treat stomach-aches, headaches, exhaustion, heart diseases, colds and hoarseness, eye infections, coughs, and asthma, and it also served to disinfect the mouth, to cleanse the skin, to reduce gases, to improve eyesight and the taste of medicines; and it was a rousing and stimulating drug.<sup>599</sup> Yemenite Jews prepared a tea from the seeds to treat stomach poisoning, diarrhoea, and vomiting, and even made a medication from them to strengthen the heart and to treat intoxication.<sup>600</sup> In Iran and Iraq they used the root for flatulence, to soothe toothache, and for pains after childbirth,<sup>601</sup> while in Egypt it was used to treat the stomach, to increase urination, to accelerate menstruation, for flatulence, and to increase sexual desire.<sup>602</sup> Its uses in Europe wereto treat stomach problems, to reduce gases, to stimulate, to prevent intestinal spasms in children, to relieve colds, to improve

<sup>595</sup> Isaacs & Baker, see indices.

<sup>596</sup> Assaph, IV, 403.

<sup>597</sup> al-Kindī, nos. 9, 15, 35, 113, 114, 130, 160, 211, 225.

<sup>598</sup> Maimonides, Regimen, 2:10; Maimonides, Poisons, p. 118; Maimonides, Aphorisms, 13:6; 9:88; 20:49; 21:80; Maimonides, Sexual, Introduction 6.

<sup>599</sup> Palevitch et al., p. 166; Plants & Animals, X, p. 262; XII, p. 97; Levey, Beduins, p. 84; Dafni, Bedouins, p. 238; Crowfoot & Baldensperger, p. 100; Chizik, p. 733.

<sup>600</sup> Reiani, no. 51.

<sup>601</sup> Hooper, p. 120; al-Rawi & Chaakravarty, p. 45.

<sup>602</sup> Ducros, p. 242.

digestion, to treat toothache and earaches, to improve eyesight, to cure asthma, to make more abundant milk in breastfeeding women, and to prevent breast swellings. It also served as a mild purgative. The seeds were used to repel worms from the intestines, and to help infants fall asleep.<sup>603</sup>

**TAI:** Fennel was widely traded in Egypt, and the Arabic family name Shummārī was sometimes given to merchants who specialized in the fennel trade.<sup>604</sup> Ibn al-Bayṭār notes the plant's name among the people of Egypt and al-Shām.<sup>605</sup> Fennel grew in Jordan and was part of the childhood landscape of the physician Ibn al-Quff al-Karakī.<sup>606</sup>

### Frankincense

Olibanum, *Boswellia carteri* (= *B. sacra*) (Burseraceae),<sup>607</sup> **A:** **lubān, kundur**<sup>608</sup>

**D&H:** Frankincense is a resinous evergreen tree, with papery, peeling bark, and clusters of pinnate leaves. The flowers are white and the resin has been used for medicinal purposes since early times.<sup>609</sup> In the Bible frankincense is one of the four constituents of incense burnt in the Sanctuary (Exodus 30:47), and it was added to the sacrifices (Leviticus 2:1). Frankincense was extremely expensive (Isaiah 43:23) because it was brought from a great distance: according to the scripture, from Ethiopia (Jeremiah 13:9). The Jewish Sages also held lengthy discussions about frankincense and its uses.<sup>610</sup> Classical physicians describe its resin, the methods for its production, and its medical uses. Dioscorides for example, in his entry *Libanon thus*, notes that 'frankincense was grown in Arabia, the color of its resin was white, oily and burns nicely'. Frankincense and the soot that was created by burning it served as a cure for intestinal diseases.<sup>611</sup> Myrrh and frankincense—the main source of wealth of the Arabian desert—constituted the main components of the

<sup>603</sup> Loewenfeld & Back, pp. 124–125; Uphof, p. 230; Grieve, pp. 293–297; Albert-Puelo, Fennel.

<sup>604</sup> Goitein, Society, I, pp. 155, 478.

<sup>605</sup> Ibn al-Baytar, al-Jami, III, p. 69; Leclerc, no. 1341. On identification, see Amar, Ibn al-Baytar, p. 75, n. 73.

<sup>606</sup> Hamarneh, Ibn al-Quff, p. 31.

<sup>607</sup> Description: Zohary, p. 483; see figure 28.

<sup>608</sup> Maimonides, Glossaire, no. 188; Issa, p. 32, no. 4.

<sup>609</sup> Bown, p. 95.

<sup>610</sup> In detail: Feliks, World, pp. 160–262.

<sup>611</sup> Dioscorides, I.81.

regional trade. These substances enriched the Nabateans and were the cause of bitter Nabatean-Roman wars over the control of their trade.<sup>612</sup>

**PU:** Frankincense figures in 10 lists of *materia medica* (T-S Ar.35.137; T-S Ar.35.327; T-S Ar.35.366; T-S Ar.39.451; T-S Ar.43.317; T-S Ar.34.341; T-S AS 184.34; T-S NS 279.57; T-S NS 325.127; T-S Ar.30.274 [North African kind]) and in 6 prescriptions: for cleaning or treating the teeth (T-S Ar.39.451 [2]), chewing gum (T-S Ar.42.20) and unknown uses (T-S AS 173.3; T-S AS 176.494; T-S AS 182.167).

**TU:** Frankincense appears as a simple in medical books: in a recipe for dyeing the hair black (T-S Ar.40.121), in a drug preparation (T-S Ar.40.57), and in another that begins with *basmala* followed by *al-shāfi* (the only healer; T-S Ar.42.152v); also in M.M. lexica (T-S Ar.39.369; T-S AS 184.234). Frankincense bark appears in recipes for the treatment of loss of teeth (T-S NS 306.73), and frankincense root and seeds are found in a prescription for powder for unknown uses (T-S Ar.40.87r).<sup>613</sup>

**OMU:** al-Kindī describes the use of the resin as a component in medical preparations.<sup>614</sup> Shabbetai Donolo relates the process of preparing medications from frankincense resin, commenting that it dissolved in oil and honey.<sup>615</sup> Benevenutus claimed that the Olibanum was a main component in the medication (an ointment) called 'Jerusalem electuary' to treat cataract.<sup>616</sup> Maimonides lists many medical uses of frankincense such as: a component in the 'royal medicine' against melancholy and in a medication for rabid dog bite and stings of the scorpion and spider; to stop haemorrhages; to accelerate wound coagulation, and to cure skin diseases. According to Maimonides, frankincense was a hot and dry drug.<sup>617</sup> Ibn al-Bayṭār describes the plant and the production of its resin, its trade, its properties and uses, and he points out its qualities. Besides quoting classical writers and physicians such as Galen and Dioscorides, he cites contemporary Arab physicians. Among the main medical uses mentioned are curing diseases and infections of the eyes, stopping bleeding and accelerating coagulation of wounds, treating burns, haemorrhoids, skin diseases, earache, swellings of the breast,

<sup>612</sup> For a comprehensive review on the subject of its trade, see *EI*, V, entry 'Luban', pp. 786–787.

<sup>613</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>614</sup> al-Kindī, nos. 146, 218; al-Biruni, I, p. 291; II, p. 102.

<sup>615</sup> Donolo, pp. 18, 21.

<sup>616</sup> Benevenutus, p. 36.

<sup>617</sup> Maimonides, Answers, 19:4; Maimonides, Aphorisms, 15: 47, 48, 55; 21:61, 76; 22:27; Maimonides, Poisons, pp. 119, 129.

and diseases of the lungs, intestines, and liver. The resin contributed to the improvement of memory and appetite, to dispelling gases, to curing cough, to strengthening the teeth and gums, and also to prepare theriac.<sup>618</sup> According to al-Qazwīnī, the resin improves memory, dries wounds, treats cancer and skin disease, strengthens the mind and stops blood hemorrhages.<sup>619</sup>

**TM:** Yemenite Jews used frankincense resin as a disinfectant after childbirth, as an incense offering, to cure insanity, and to make a preparation for cough, colds, and phlegm secretions.<sup>620</sup> In Iran and Iraq different species of the frankincense tree grow with a variety of resin qualities which in addition to their use as incense, serve to improve the memory and to dress wounds.<sup>621</sup> In Egypt the frankincense resin was used mainly in preparations to treat headaches and the intestines.<sup>622</sup> TM used frankincense resin as an expectorant drug, a stimulant, to cure wounds, as a disinfectant and for the treatment of childrens.<sup>623</sup> In various cultures it has also been used as incense. Modern research has examined the medical properties and the commercial importance of various species of the *Boswellia*, as well as the pharmacological constituents of the frankincense resin.<sup>624</sup>

**TAI:** Frankincense was an important and expensive commodity traded in the medieval Mediterranean. According to the Genizah it was traded at the ports and cities of Alexandria, Cairo, and Mahdiyya, and of Sicily.<sup>625</sup> Frankincense is mentioned in a list of merchandise exported from the Syrian region to Europe in 1233.<sup>626</sup> Hasselquist reports that the source of the resin was Arabia, and he sets out the trade route from Jedda, either by way of the Red Sea to Suez or by overland caravan. In his view, the granular resin was mixed with small stones that sometimes constituted 60% of its weight. The substance was exported by the Dutch

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<sup>618</sup> Ibn al-Baytar, *al-Jami*, IV, pp. 83–85; Leclerc, no. 1974. Cf. al-Antaki, pp. 175–276.

<sup>619</sup> al-Qazwini, p. 232.

<sup>620</sup> Reiani, no. 15.

<sup>621</sup> Hooper, p. 91.

<sup>622</sup> Ducros, p. 204.

<sup>623</sup> Michie & Cooper.

<sup>624</sup> In detail: Chopra et al., p. 70; Jones & Nunn; Howes, pp. 149–153; 310–311; Uphof, p. 82; Grieve, pp. 326–327; Hill, p. 174; Bone.

<sup>625</sup> Goitein, *Society*, I, p. 154, III, p. 29, no. 311, p. 36, no. 313, p. 555, no. 467, IV, p. 588, no. 794; Gil, *Kingdom*, see indices.

<sup>626</sup> Venice Laws, p. 285; Prawer, *Colonial*, p. 480.

to Marseilles and to Moscow where it was used in the leather industry and as incense for churches.<sup>627</sup> Various fraudulent methods which were the accepted practice during the Middle Ages (addition of various substances to the resin grains) are also described by Ibn al-Baytār.<sup>628</sup>

## Galbanum

*Ferula galbaniflua* (Apiaceae), **A: qinna, ḥalbāna, kalakh**<sup>629</sup>

**D&H:** Various species of *ferula* that grow worldwide are used for curative purposes. Medical use was made mainly of the resin produced from the base of the stem. In the table below all the main species that appear in medieval sources are listed.<sup>630</sup> The Sages mention the 'kelech' in connection with cross-breeding (Mishna, Kil'ayim, 89b) and as one of the species of candlewick that are prohibited for the Sabbath eve candles (Mishna, Shabbat, 82a). The researcher Feliks identifies the 'ḥelbena' mentioned in the Bible as one of the ingredients of the incense (Exodus 30:34) with the resin extracted from various species of *ferula* in Turkestan, Persia, and Crete, especially from the galbanum species (*Ferula galbaniflua*). In the past this resin, like the other ingredients of incense, was imported to the Land of Israel.<sup>631</sup> During the Roman period the different varieties of *ferula*, mainly the resin extracted from the base of the stems, were an important medicinal substance. Dioscorides describes six plants, and also various substances derived from different species of *ferula* (including the giant fennel), noting especially those that grew in Syria (*Libanotis*, *Narthex*, *Silphion*, *Sagapenum*, *Chalbane*, *Ammoniakon*)<sup>632</sup>

**PU:** Galbanum figures in 4 lists of *materia medica* (T-S Ar.34.341; T-S Ar.39.450; T-S Ar.43.317; T-S AS 184.234) and in 2 prescriptions: for liver problems (seeds, T-S Ar.39.274) and for unknown uses (plaster, T-S NS 222.34).

<sup>627</sup> Hasselquist, pp. 297–298.

<sup>628</sup> Ibn al-Baytār, al-Jami, IV, pp. 83–85; Leclerc, no. 1974.

<sup>629</sup> Issa, p. 82, no. 12; Maimonides, Glossaire, no. 339.

<sup>630</sup> Identification of species according to Maimonides, Glossaire, nos. 18, 31, 124, 223, 280, 339; Issa, p. 82, nos. 8–18. Uses and synonyms also in Uphof, p. 222; Hooper, p. 120, Chopra et al., pp. 37–38.

<sup>631</sup> Feliks, World, p. 276.

<sup>632</sup> Dioscorides, III.87, 91, 94, 95, 97, 98.

**TU:** Galbanum is mentioned in medical books: in recipes for the treatment of eye diseases, copied, according to Isaacs, with some variation from 'Alī b. 'Īsā's *Tadhkirat al-kaḥḥālīn* (ed. Hyderabad, p. 347; T-S NS 306.48r); It also appears as a simple in a prescription for unknown uses (T-S NS 306.29).<sup>633</sup>

**OMU:** According to al-Kindī, 'ḥalbāna' is a component in a medication against insanity<sup>634</sup> Ibn al-Bayṭār describes a few varieties of ferula and their products, and states their medical uses under many entries.<sup>635</sup>

**TM:** 'ḥalbāna' served in Iraq for internal treatment of the intestines and external treatment of wounds, while in Egypt it is still used today, among other things, to treat asthma, epilepsy, and growths.<sup>636</sup> Galbanum is still sold in the markets of India and Western Asia. In modern Egypt the substance is considered a purgative and sexually arousing, while in Iran and Iraq it is used to treat joint diseases, back pains, and haemorrhoids.<sup>637</sup>

**TAI:** al-Birūnī indicates the medical uses and toxicity of the resin of the ferula that grew in Morocco and Greater Syria.<sup>638</sup> Ibn al-Bayṭār cites Abū al-'Abbās al-Nabātī, who noted that this was the name of the ferula species in Bayt al-Maqdis (Jerusalem).<sup>639</sup>

## Garden Cress

Pepper Grass, *Lepidium sativum* (Brassicaceae), **A:** **rashād**, **ḥurf**; *Lepidium latifolium*, **A:** **shīṭaraj**<sup>640</sup>

**D&H:** Garden cress is an annual plant, short (up to 40 cm) with branching stems in the upper section. Its leaves are split at the base, the stem leaves are small, the flowers are white, and the fruit is flattened and double-seeded.<sup>641</sup> Assyrian medicine uses garden cress for curing the eyes, mouth, ears, head, breathing, and stomach, as well as coughs.<sup>642</sup>

<sup>633</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>634</sup> al-Kindī, nos. 1, 32, 63, 138, 188, 205.

<sup>635</sup> Ibn al-Baytar, al-Jami, IV, p. 37; Leclerc, nos. 83, 158, 818, 1841, 1961.

<sup>636</sup> Hill, p. 173; Hooper, p. 118. Cf. al-Kindī, p. 240; Ducros, p. 191.

<sup>637</sup> al-Kindī, p. 283; Ducros, p. 126; Hooper, p. 119.

<sup>638</sup> al-Biruni, II, pp. 88–89.

<sup>639</sup> Ibn al-Baytar, al-Jami, II, p. 95; Leclerc, no. 876; Ibn al-Baytar, Tafsir, p. 138. For additional identification see Issa, p. 93, no. 9.

<sup>640</sup> Maimonides, Glossaire, p. 53, no. 163; al-Biruni, II, p. 88; Issa, p. 108, no. 1; Dinsmore & Dalman, no. 136; Crowfoot & Baldensperger, p. 101.

<sup>641</sup> Plants & Animals, X, p. 112.

<sup>642</sup> Thompson, Art, p. 59.

Dioscorides reports on the use of *kardamon*, which is identified with garden cress, as an emmenagogue, to cause abortion, to let blood, and to cure skin diseases and internal wounds.<sup>643</sup> Garden cress is mentioned in the Mishna, Tosefta, and Talmud.<sup>644</sup>

**PU:** Garden cress figures in one list of *materia medica* (T-S Ar.35.328) and in 10 prescriptions: for cough (seeds, T-S K25.116), fever (seeds and syrup, T-S AS 155.277), and hallucination (seeds, T-S 16.291). It is also mentioned in prescriptions for unknown uses (T-S Ar.41.81; T-S AS 179.283; T-S NS 306.41; seeds, T-S Ar.40.141; Indian kind, T-S Ar.30.291, T-S AS 173.3).

**TU:** Garden cress is mentioned in general medical books (T-S Ar.40.1; T-S Ar.41.131), in books on dermatology (T-S Ar.45.49; T-S NS 306.93), on dentistry (T-S Ar.43.306), on *materia medica* (T-S Ar.39.208; T-S Ar.39.351; T-S Ar.39.357; T-S Ar.40.45; T-S Ar.42.73; T-S Ar.44.129; T-S NS 305.84), in pharmacopoeias (T-S Ar.41.96; T-S Ar.45.19; T-S Or.1080.3.39), Q.M. (T-S AS 179.187), and in other fragments (T-S Ar.38.76; T-S NS 297.48). Roasted seeds are one of the simples in a recipe for a powder used to treat diarrhoea and to strengthen the stomach muscles (T-S Ar.40.180). Other species of cress feature in a list of simples, where Dioscorides is cited (T-S NS 305.84). Indian cress is mentioned in a recipe for unknown uses (T-S Ar.41.90) among many other simples, several of Indian origin. Cress seeds are mentioned in quasi-medical astrological prognostications concerning illnesses, health, and happy events (T-S AS 179.187).<sup>645</sup>

**OMU:** In his medical treatise, al-Tamīmī lists ‘shītaraj al-shāmī’ among the types of medicines.<sup>646</sup> According to al-Kindī, various types of cress were used to treat black spots on the skin, stomach ulcers, weakness, and the gums, and were a component in a medication for mumps (parotitis).<sup>647</sup> Among its uses, Ibn al-Bayṭār lists the curing of skin diseases and intestinal disorders, and as an emmenagogue.<sup>648</sup> ‘Ḥurf al-suṭūḥ’ has been identified by certain researchers with garden cress,<sup>649</sup> but others claim it

<sup>643</sup> Dioscorides, II.156.

<sup>644</sup> For remarks on its identification see Amar, Production, p. 286; Low, I, pp. 505–506; Feliks, Yerushalmi, II, p. 147; Feliks, World, p. 107.

<sup>645</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>646</sup> al-Tamimi, p. 46b.

<sup>647</sup> al-Kindi, nos. 9, 31, 38, 81.

<sup>648</sup> Ibn al-Baytar, al-Jami, II, p. 17; Leclerc, no. 654. Cf. Maimonides, Glossaire, p. 109, no. 399; al-Antaki, p. 122; Dietrich, Egypt, pp. 41–44.

<sup>649</sup> See editor’s remarks in: Ibn al-Baytar, Tafsir, pp. 202–203.



refers to the type *Lepidium campestre*.<sup>650</sup> The Jewish physician al-Kūhīn al-‘Aṭṭār al-Isrā’īlī wrote that ‘A‘ras’ is ‘al-shīṭaraj,’ and the people of al-Shām call it ‘al-khāmisha.’<sup>651</sup> al-Qazwīnī relates in his entry ‘ḥurf’ that eating this plant adds to intelligence and wisdom, and enhances sexual potency. He cites Ibn Sinā asserting that the plant is effective against skin diseases (scurvy), wounds, bites, and stings. A high dosage is liable to cause abortion.<sup>652</sup> Ibn al-Bayṭār in his entry ‘ḥurf’ lists medicinal uses such as curing pains of the side and head, elimination of intestinal worms, softening the stomach, reducing swelling of the spleen, increasing sexual desire, and curing bites, stings, and skin diseases.<sup>653</sup>

**TAI:** According to Ibn al-Bayṭār, the herb known in Egypt as the ‘Sultan’s herb,’ and the ‘chroniclers say it is a herb widely found in Damascus and that it is pungent.’<sup>654</sup> Ibn al-Bayṭār states in his entry ‘khāmisha’ that this is the name for ‘shīṭaraj’ which is given by the residents of Jerusalem and its environs in the al-Shām region.<sup>655</sup>

## Ginger

*Zingiber officinale* (Zingiberaceae), **A:** **zanjabil**<sup>656</sup>

**D&H:** Ginger is one variety of a tropical species that includes 1300 plant types with bulbous roots, many of which contain essential oils, and it serves as spice and a medicinal herb. The stalks grow to a height of up to one metre.<sup>657</sup> The plant was apparently cultivated in China and introduced to Europe by the Greeks and Romans. Dioscorides notes in his entry *Zingiberi*—identified with ginger—that the bulbous stalk has heating qualities and is used to treat stomach disorders and to counteract poisons.<sup>658</sup> According to the Jewish Sages, ‘zingbila’ was generally chewed, probably to sweeten the breath, or as a remedy. Ginger drink

<sup>650</sup> Issa, p. 107, no. 9. Discussion in Amar, Ibn al-Baytar, p. 75, n. 75.

<sup>651</sup> al-Israili, p. 209. According to Issa, p. 108 this relates to garden cress, but in Amar’s opinion this is a local term for tall cress.

<sup>652</sup> al-Qazwini, p. 224. Cf. Ibn Sina, p. 314.

<sup>653</sup> Ibn al-Baytar, al-Jami, II, pp. 15–16; Leclerc, no. 654. Cf. al-Antaki, p. 122.

<sup>654</sup> Ibn al-Baytar, al-Jami, II, p. 17; Leclerc, no. 654, Ibn al-Baytar, Tafsir, pp. 202–203, Cf. Maimonides, Glossaire, p. 109, no. 399; al-Antaki, p. 122; Dietrich, Egypt, pp. 41–44.

<sup>655</sup> Ibn al-Baytar, al-Jami, II, p. 46; Leclerc, no. 751.

<sup>656</sup> Maimonides, Glossaire, p. 49, no. 145; p. 98, no. 353; Issa, p. 191, no. 11.

<sup>657</sup> Zohary, p. 651; Hill, p. 439.

<sup>658</sup> Dioscorides, II.190.

is mentioned in the Koran in the description of Paradise (Qurʾān 76: 15–17).

**PU:** Ginger figures in 3 lists of *materia medica* (T-S Ar.30.274; T-S Ar.35.252; T-S Ar.43.317) and in 5 prescriptions for unknown uses (T-S Ar.43.338; T-S AS 173.3 [2]; water, T-S Ar.41.125), one in the form of pills (T-S AS 146.197) and another named small aṭrīfal (T-S Ar.42.67).

**TU:** Ginger is mentioned in medical books: lexica of *materia medica* (T-S AS 177.407; T-S AS 179.329; ) and in a prescription for unknown uses (T-S Ar.41.90) including one for a paste (T-S Ar.42.46), another which begins with a *basmalah* (T-S Ar.42.11r), and a similar one for ginger water (T-S Ar.41.125r). It is also mentioned among the simples in recipes for the treatment of diseases of the kidney (T-S NS 90.78; T-S NS 90.77; T-S NS 90.79), wind in the stomach (T-S AS 174.17), paresis and limpness (weakness) of the sexual organ and as aphrodisiac (T-S AS 179.226; T-S AS 179.251); and to strengthen penile erection (T-S AS 181.82; T-S AS 181.112). Wild ginger is mentioned in lexica of *materia medica* (T-S AS 160.197; T-S AS 170.136) and in a prescription for the treatment of quartan fever, the burning of black bile and phlegm (T-S NS 306.74).<sup>659</sup>

**OMU:** According to al-Kindī, ginger is a component in various medications, for example, for improving the eyesight and treating pains in the throat, ears, and stomach.<sup>660</sup> Maimonides reports that ginger is a component in a medication called ‘the great ’iṭrīful’ which ‘strengthens the heart and limbs, delays ageing, fortifies the senses and even aids coitus.’ The plant is also used for the ‘great theriac’ and the ‘walnut theriac’, and is listed among the hot and moist drugs.<sup>661</sup> Ibn al-Bayṭār cites important physicians of his time, describing the medicinal uses of the ‘zanjabil’: improvement of sexual potency, expulsion of stomach gases, treatment of stomach and liver disorders, draining of mucus, heating the body and curing eye diseases.

**TAI:** Ginger was traded according to the Genizah fragments [11th century] among the cities of Alexandria, Cairo, and Mahdiyya (Bodl MS Heb a 3,f.13).<sup>662</sup> Evidence of the ginger trade in the Land of Israel in the

<sup>659</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>660</sup> al-Kindi, nos. 72, 109, 154, 216, 225–226.

<sup>661</sup> Maimonides, Aphorisms, 21:81; Maimonides, Regimen, 3:11; Maimonides, Poisons, pp. 109, 115.

<sup>662</sup> Goitein, Society, I, p. 44; Gil, Kingdom, III, p. 958, no. 581; IV, p. 465, no. 751, p. 482, no. 753, p. 653, no. 820; and see indices for more.

Crusader period can be found in the 13th-century customs lists of Acre, where the 'gingimbre' is mentioned.<sup>663</sup> Sources from that period show that the quality of the ginger traded in Syrian markets was superior because it arrived overland and was not damaged by a sea voyage. The merchandise was bought by traders who exported it to Europe.<sup>664</sup> From trade records of 1414 CE it appears that ginger was bought in Ramlah by a Venetian trading company with the purpose of export to Europe. The spice was marketed in packages, and large quantities of it were brought by caravans from Mecca. The sources mention two varieties: 'zanjabīl baladī' and 'zanjabīl makki'.<sup>665</sup> According to Moshe Poriat, in the first half of the 17th century one could obtain various perfumes and spices, including ginger, in the Jerusalem markets.<sup>666</sup>

### Grape Vine

*Vitis vinifera* (Ampelidaceae = Vitaceae), **A:** **zabīb** (raisins), **ḥiṣrim** (sour grape), **khall** (vinegar), **khamr** (wine), **ṭarṭar** (tartar), **zabīb 'aynūnī** (globular raisin)

**D&H:** The grape vine is a woody climbing plant with leaves that fall in the winter. In spring, after the leaves sprout, small green flowers blossom. The juicy fruit is in cluster formation and ripens in the summer.<sup>667</sup> This is an ancient cultivated crop widely grown throughout the world. The cultivated vine derives from a species originating in Asia Minor.<sup>668</sup> Grape seeds from the Mousterian period have been found in the Kebara caves on Mount Carmel.<sup>669</sup> Grape juice was used as a basis for many remedies in ancient Babylonia, and other products such as vinegar, wine and raisins have also been used as medicinal cures.<sup>670</sup> Grape vine is one of the seven species with which the Land of Israel was blessed (Deuteronomy, 8:8). The cultivation of the grape, which was very widely grown in this region, is mentioned in many Jewish sources such as the Bible, Mishna, Tosefta, and Talmud, as well as in pagan and Christian sources.

<sup>663</sup> Assises, p. 176.

<sup>664</sup> Ashtor, *Levant*, p. 33.

<sup>665</sup> *Ibid.*, pp. 285, 297, 299.

<sup>666</sup> Ya'ari, *Travels*, p. 278.

<sup>667</sup> *Plants & Animals*, XII, p. 115.

<sup>668</sup> Zohary, p. 476.

<sup>669</sup> Lev, *Kebara*, p. 57.

<sup>670</sup> al-Kindi, p. 306, no. 207.

It was also evident from archaeological finds such as an apparatus for making grape products.

The grape and its products were used mainly as food and drink, for industry, and for ritual ceremonies. Medicinal uses of the grape and its products are also mentioned in various sources.<sup>671</sup> Dioscorides, for example, notes the medicinal use of grapes to improve the appetite, to relieve stomach pains, and to treat dysentery; he also recommends wine to reduce fever.<sup>672</sup>

**PU:** Various grape wine products figure in 7 lists of *materia medica* (T-S Ar.35.229; T-S Ar.43.317; T-S AS 169.199; T-S NS 306.117; sour grapes, T-S NS 321.49; vinegar, T-S Ar.35.366; tartar, T-S AS 179.132); in 22 prescriptions: for weak eyesight and migraine (Maimonides; raisin, T-S Ar.30.286), diet (raisin, T-S Ar.41.71), aphrodisiac (raisin, T-S NS 164.159), topical application (vinegar, T-S Ar.30.99), muscle pains (vinegar, T-S NS 108.139), swellings (vinegar, T-S NS 194.70); for unknown uses (sour grapes, T-S Ar.42.110; T-S Ar.30.305 [water]; raisins, T-S Ar.40.141; T-S NS 297.260; red raisins, T-S Ar.30.65; T-S Or.1081.1.66; T-S Or.1081.J.39; T-S 12.33; T-S AS 148.27 [jam]; vinegar, T-S AS 162.186; T-S NS J38; red vinegar, T-S Ar.40.87 [powder]; wine, T-S Ar.30.65; T-S Ar.42.152; globular raisins, T-S Ar.30.65); and in an alchemical astrological preparation (wine, T-S 8J14.3 [2]).

**TU:** Wine was an important simple in medieval medicine; clear evidence of the use of grape wine products is found in medical books found in the Genizah. Wine appears in some prescriptions for unknown uses, for example (T-S AS 182.37), and in a lexicon of *materia medica* (T-S AS 142.109r). Old wine was a simple in several recipes for the treatment of paresis and limpness (weakness) of the sexual organ and as an aphrodisiac (T-S AS 179.226; T-S AS 179.251). A drink of wine and aniseed with saffron before taking a bath is advice given to a patient in one fragment (T-S AS 166.208r). Wine and oil were used in a quasi-medical recipe for the treatment of snakes bite (T-S AS 142.202) and in an alchemical preparation (T-S NS 327.81). A recipe for making spring wine is found as well (T-S Ar.42.76). Vinegar is present in some recipes for unknown uses (T-S AS 151.56v; T-S AS 162.69; T-S AS 162.132; ), and in recipes for the treatment of toothache and inflammatory swellings (T-S

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<sup>671</sup> Comprehensive survey in Goor, Fruits, pp. 27–53; Feliks, World, pp. 17–24; Goor, Wines; Shapira, Wine. On the cultivation of the grape vine in the Land of Israel and Syria in the Middle Ages, see Amar, Production, pp. 72–105.

<sup>672</sup> Dioscorides, V.3.

Ar.39.313; T-S Ar.39.124, 166, 253), diarrhoea with blood (antidote; T-S Ar.40.155), diarrhoea (T-S Ar.41.104), against diarrhoea and to strengthen the stomach muscles (powder; T-S Ar.40.180), to ease tooth extraction (mouthwash ; T-S Ar.41.30), headache and head cold (T-S AS 181.237), and for dyeing the hair black (T-S Ar.40.121). It also appears as a simple in part of a tabulated work on medicine that includes general management of fevers, hectic and septic fevers, cancer, erysipelas, soft and hard inflammatory swellings, and elephantiasis (T-S Ar.41.137). Vinegar was a common simple in quasi-medical alchemical preparations along with metals and minerals (T-S 20.20; T-S 16.270r; T-S NS 327.81; T-S AS 182.288), and in another herbal recipe for unknown uses (T-S NS 90.16). Grapes are mentioned in a preparation of potions (T-S AS 166.217) and raisins (dry grapes) are a simple in a recipe for the treatment of heat, dryness, and red and black biles (T-S AS 111.22) and in others for unknown uses (T-S AS 183.106); likewise red raisins (T-S NS 90.51v). Raisins also feature in prescriptions, one of which was extracted from Ibn Sīnā's *al-Qānūn* (ed. Bulaq, III:302–3; T-S Ar.41.96). Grape juice is present in a recipe for unknown uses (T-S Ar.41.110r), and sour grapes in one for the treatment of excessive lachrymation due to laughing, crying, or exposure to heat or cold winds (T-S Ar.42.5). Syrian grapes are listed in a pharmacopoeia among other fruits (T-S AS 177.144). Sour grapes (probably juice of unripe grapes)<sup>673</sup> appear in a fragment concerned with nutrition and diseases (T-S AS 176.81), and sour grape water as a simple in part of the aforementioned tabulated medical work on general management of fevers, hectic and septic fevers, cancer, erysipelas, soft and hard inflammatory swellings and elephantiasis (T-S Ar.41.137). Tartar is found as one simple in a compound with other minerals and metals in recipe for unknown uses (T-S NS 90.64) and in a recipe of a compound for topical use (T-S NS 183.94).<sup>674</sup>

**OMU:** The physician Assaf writes:

Lebanon wine, Carmel wine, the wine from the mountains of Jerusalem and of Samaria, Cretan wine and Egyptian wine, are the seven kinds of wine superior to all other varieties in the world. The other types of wine are worthless compared to these because they differ in quality, taste and smell and for medicinal purposes by virtue of their strength.<sup>675</sup>

<sup>673</sup> Amar, *Production*, pp. 108, 116.

<sup>674</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>675</sup> Assaph, IV, p. 175.

Ibn al-Bayṭār in his entry ‘inab’ mentions the medicinal uses of grapes.<sup>676</sup> Benevenutus states that white wine is a component in a medication for cataract<sup>677</sup> and in another medication for the eyes called ‘Jerusalem collyrium’.<sup>678</sup> The following is a survey of the medicinal uses of the different grape products without reference to period or physician. Because of the numerous sources for this subject only some of them are mentioned, and just a few of their uses. **Wine:** a major component in many medications (more than ten references are made by Maimonides) against fatal drugs, snakebite, stings of poisonous creatures, and in medications for curing various diseases.<sup>679</sup> **Vinegar:** an important component in medications, as well as in a preparation for treating attacks by poisonous creatures, in cathartic medicines, and for haemorrhoids. A medication combining vinegar and honey called ‘sikanjabīn’ (also known as oxymel) was frequently used by Maimonides and physicians of his time.<sup>680</sup> **Vine leaves:** a medication for the stomach and especially as a poultice to dress wounds.<sup>681</sup> **Raisins:** Mentioned as effective for liver complaints and used as a component in cathartic medications and in various medicines.<sup>682</sup> Ibn al-Bayṭār in his entry ‘zabīb’ mentions various contemporary medicinal uses.<sup>683</sup> **Vine roots:** according to al-Kindī, the roots of the grape vine were used as a component in a preparation to treat swellings and carbuncles.<sup>684</sup> **Vinegar grapes:** these are called ‘ḥiṣrim’ in Arabic and are also mentioned in connection with medicinal uses.<sup>685</sup> **Grape honey:** Dāwud al-Anṭakī describes a method of producing ‘dibs’ (grape honey) and lists its medicinal uses. ‘Dibs’ was a hot and moist drug used as a component in many medicinal preparations to treat obesity, to purify the blood, to open obstructions in the body and to cure jaundice,

<sup>676</sup> Ibn al-Baytar, al-Jami, III, p. 141; Leclerc, no. 1595. Cf. al-Antaki, p. 240.

<sup>677</sup> Benevenutus, p. 19.

<sup>678</sup> Ibid., p. 41.

<sup>679</sup> Maimonides, Regimen; Maimonides, Aphorisms; Maimonides, Poisons, pp. 105, 107.

<sup>680</sup> Maimonides, Poisons, pp. 102, 105; Maimonides, Regimen, 3:5–6; Maimonides, Aphorisms, 9:77; 21:19–27.

<sup>681</sup> Maimonides, Aphorisms, 9:105; 21:31.

<sup>682</sup> Maimonides, Regimen, 1:13; 3:5, 6. Raisins are mentioned 14 times in Maimonides, Aphorisms, mainly 23:19, 20.

<sup>683</sup> Ibn al-Baytar, al-Jami, II, pp. 153–155; Leclerc, no. 1084.

<sup>684</sup> al-Kindi, no. 121.

<sup>685</sup> Maimonides, Regimen, 4:14; Ibn al-Baytar, al-Jami, II, pp. 22–23; Leclerc, no. 679.

heart disease, depression, and epilepsy.<sup>686</sup> **Grape juice:** According to al-Kindī, grape juice was a component in a preparation to treat neck pains.<sup>687</sup> **Vine resin:** Used for treating skin diseases.<sup>688</sup>

**TAI:** Grapes were an important agricultural crop in the Levant in ancient times,<sup>689</sup> and continued to hold a central place in agriculture in the middle ages as well. Evidence of grape cultivation and the use of its various products, mainly wine, vinegar, grape honey, and raisins, can be found in Christian, Muslim, and Jewish sources.<sup>690</sup> Several 11th- and 12th-century documents from the Genizah mention different of grape-vine products, which were sent from Sicily, among other places, to Mahdiyya, Ashkelon, and Egypt, where they were traded, processed and consumed as food, drink, and medicinal substances.<sup>691</sup>

### Gum Arabic

Babul Acacia *Acacia nilotica* (Mimosaceae), **A:** *ṣamgh*, *ṣamgh*, *ṣamgh* ‘*arabī* [resin], *qāqyā*, ‘*aqāqyā* [pod juice]<sup>692</sup>

**D&H:** The acacia species includes 750 varieties of trees and shrubs widespread throughout tropical and sub-tropical regions. Most of them grow in desert areas, and some of the trees and shrubs are thorny. The leaves are composite and pinnate, the flowers are small and bloom abundantly in round blossom clusters. The fruits are cylindrical or flattened seed capsules, elongated or curled, and contain few seeds. The use of acacia gum was widespread in Egypt from the second millennium BCE, and in Sudan during the first century CE.<sup>693</sup> The Pentateuch describes the use of acacia wood for building the Sanctuary in the desert and for making ritual objects such as the Holy Ark, the altar, the table, and the pillars (Exodus, 25–27). Acacia is also mentioned in Prophets (Isaiah 41:19). The Talmud mentions the use of ‘*akakia*’ (acacia gum) for remedial purposes and as a contraceptive. Because of its low cost and its appearance,

<sup>686</sup> al-Antaki, pp. 150–151. On the identification production, trade, and uses of ‘*dibs*’ in the Middle Ages, see Amar, *Dibs*.

<sup>687</sup> al-Kindī, no. 106.

<sup>688</sup> Assaph, IV, p. 400.

<sup>689</sup> Amar, *Grapes*.

<sup>690</sup> In detail: Amar, *Production*, pp. 72–105.

<sup>691</sup> Goitein, *Jewry*, p. 225; Goitein, *Society*, II, p. 270, IV, pp. 253–255. Gil Kingdom, I, p. 563, pp. 594–595; II, p. 698, no. 238, III, p. 464, no. 440.

<sup>692</sup> Maimonides, *Glossaire*, p. 19, no. 12; p. 80, no. 278.

<sup>693</sup> Hill, p. 151; see figure 29.

acacia gum was sometimes used as a deceptive substitute for the more expensive myrrh and frankincense. Dioscorides mentions *akakia* identified as *Acacia vera*, noting that it grew in Egypt and especially the use of its gum to cure diseases of the eyes and intestines, as well as mouth sores, and to dye the hair black.<sup>694</sup>

**PU:** Different products of *Acacia* figure in 7 lists of *materia medica* (pod juice, T-S Ar.43.317; gum, T-S Ar.35.82 [3]; T-S Ar.43.317; T-S Ar.51.53; T-S AS 177.200; T-S AS 179.80; T-S NS 305.69 [2]) and in 14 prescriptions, for weak eyesight and migraine (Maimonides; T-S Ar.30.286), eye diseases (T-S Ar.42.60; T-S Ar.44.162 [2]; T-S AS 153.89 [collyrium]; T-S AS 161.23), cough (T-S K25.116; T-S 8J15.20), a depilatory for hairy women (T-S Ar.11.22), and stomach problems (T-S NS 297.216). It is also mentioned in prescriptions for unknown uses (pod juice, T-S NS 306.48; gum, T-S Ar.40.141; T-S Ar.51.76; T-S NS 297.17; T-S NS 306.48).

**TU:** Gum arabic features in several medical books in recipes for the treatment of hot and burning sensations in the eye (kohl; T-S K 25.83r), strengthening the stomach and for diarrhoea resulting from weakness of the liver (T-S Ar.40.51), diarrhoea (compound paste; T-S Ar.42.37), diarrhoea, abdominal pains, dysuria, and fevers (T-S AS 177.407), loss of teeth (T-S NS 306.73), and leucoderma (embrocation; T-S AS 180.16). Gum arabic is mentioned in several lexica of *materia medica* (T-S Ar.41.37; T-S AS 183.279) and recipes for unknown uses (T-S Ar.40.57; T-S Ar.51.76r; T-S AS 180.171), one of which is for preparing lozenges (T-S Ar.11.13r), a rob and an electuary (T-S NS 34.16). It is also found in ‘Alī b. ‘Īsā’s *Tadhkirat al-kaḥḥālīn*, third discourse, chapter 27 (see ed. Hyderabad) as a cure for dry wounds (T-S Ar.11.6).<sup>695</sup>

**OMU:** According to al-Kindī, “aqāqyā’ is a preparation for the teeth and for wounds, and ‘gumi arabicum’ is a component in medications against cough and to treat eye diseases.<sup>696</sup> Maimonides quotes al-Tamīmī, noting that “aqāqyā’ is a component in a medication for fracture. Elsewhere he describes the use of ‘gumi arabica’ to cleanse the body and head of liquids and mucus. The ‘juice of acacia seed pods’ was used as a component in a preparation to constrict the glans and strengthen the penis, as well as in a preparation to restore virginity. The ‘aqāqyā’ (juices of

<sup>694</sup> Dioscorides, I.133.

<sup>695</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>696</sup> al-Kindī, nos. 57, 103–104, 111, 150, 159, 172–173, 175, 177; al-Biruni, I, pp. 37–38.



the fruit and seed pod) and 'gumi arabica' were considered a hot and dry drug.<sup>697</sup> Ibn al-Bayṭār in his entry 'ṣamgh' describes gum arabic and lists its medicinal uses, such as: to dilute bitter medication, to cure diseases of the eyes and intestines, to relieve coughs, to splint fractures, and as a component in a cathartic medication. Gum arabic was so frequently used that the word 'ṣamgh' alone came to mean 'ṣamgh 'arabī'.<sup>698</sup> In the entry 'karat', identified with the acacia of the Nile, Ibn al-Bayṭār describes the tree that grew in Egypt, lists its medicinal uses, and notes that this was the 'ṣant' (gum arabic).<sup>699</sup>

**TAI:** Gum arabic was among the most traded, hence utilized, substances in the Genizah community.<sup>700</sup> From a letter found in the Genizah from Natan ha-Cohen of Ashkelon to Ola ha-Levi in Fustat (1100 CE), we learn that juice of acacia pods was made in the Land of Israel and exported to Egypt.<sup>701</sup>

### Haematite

*Rubrica sinopica*; [Fe<sub>2</sub>O<sub>3</sub>], **A:** *maghra*, *shādana*, *shādhan*<sup>702</sup>

**D&H:** A black-grey red-veined substance (giving it the name 'blood-stone'), containing 70% iron, non-magnetic, and created in nature by hydrothermal and sedimentary processes.<sup>703</sup> Haematite was a well-known mineral deposit in ancient Mesopotamia.<sup>704</sup> Dioscorides refers to two types, *Haimatites* and *Schistos Lithos*, and states that they are components in medicinal preparations for eye remedies, for the treatment of haemoptysis, and for women's diseases.<sup>705</sup>

**PU:** Haematite figures in 4 lists of *materia medica* (T-S Ar.30.274; T-S Ar.35.366; T-S Ar.39.487; T-S NS 305.69) and in 2 prescriptions for unknown uses (T-S Ar.44.162; T-S NS 297.17).

**TU:** Haematite is mentioned in medical books (T-S Ar.44.69), books on ophthalmology (T-S Ar.43.248; T-S Ar.44.13; T-S AS 183.201), on

<sup>697</sup> Maimonides, Aphorisms, 9:123; 13:13; 21:73, 78; Maimonides, Sexual, 8:11; 17:2.

<sup>698</sup> Ibn al-Baytar, al-Jami, p. 85; Leclerc, no. 1407.

<sup>699</sup> Ibn al-Baytar, al-Jami, IV, pp. 14–15; Leclerc, no. 1758.

<sup>700</sup> Goitein, Society, I, p. 154.

<sup>701</sup> Gil, III, pp. 484–486, no. 588.

<sup>702</sup> Maimonides, Glossaire, nos. 238, 369; al-Biruni, I, p. 307; Ghaleb, I, p. 294, no. 6256; II, p. 615, no. 23994.

<sup>703</sup> *HE*, IX, 630.

<sup>704</sup> Levey, Chemistry, p. 188.

<sup>705</sup> Dioscorides, V.144.

*materia medica* (T-S Ar.39.208; T-S NS 306.117), in pharmacopoeias (T-S Ar.43.231; T-S AS 144.205; T-S Or.1080.3.39, dentistry (T-S NS 306.73) in other fragments (T-S Ar.38.9; T-S Ar.39.472; T-S Ar.43.312; T-S NS 297.17; T-S NS 297.262), and in recipes for unknown uses (T-S Ar.39.487).<sup>706</sup>

**OMU:** al-Kindī reports the use of haematite in various medicinal preparations for the eyes, to strengthen sight, and to prevent nosebleeds.<sup>707</sup> This last use is evidence of the medieval practice of the doctrine of signatures.<sup>708</sup> Maimonides notes that ‘shādana, which is the bloodstone’ is included among the cold and dry drugs, and has many uses.<sup>709</sup> The substance has medical uses such as stopping haemorrhages and diarrhoea, curing various skin diseases, swellings, and suppurating wounds, eliminating intestinal worms, and knitting broken bones and fractures.<sup>710</sup>

**TAI:** al-Muqaddasī tells about the red chalk called ‘al-maghra’ which comes from the city of Aleppo. According to him, the mineral deposit was also found in the region of Amman, but was of inferior quality.<sup>711</sup> al-Tamīmī describes the use of ‘maghra’ for medical purposes, in addition to the use of a few types of clay.<sup>712</sup>

## Henna

*Lawsonia inermis, alba* (Lythraceae), **A:** ḥinnā’, qaṭāb<sup>713</sup>

**D&H:** Heavily scented evergreen shrub or tree (6 m), with narrow pointed leaves, clusters of small white-pink flowers, and blue-black berries.<sup>714</sup> (White) henna is listed in the Ebers Papyrus among medicinal substances used in Egypt in the 16th century BCE. Remains of the colour produced from the henna have been found on mummies in Egypt.<sup>715</sup> Henna is mentioned in the Bible (Song of Songs, 1:14) and in the Mishna

<sup>706</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>707</sup> al-Kindi, nos. 102, 150, 151, 156, 157, 174, 176, 177, 220.

<sup>708</sup> Lev, Signature.

<sup>709</sup> Maimonides, Aphorisms, 21:73.

<sup>710</sup> al-Antaki, p. 312. Compare Ibn al-Baytar, al-Jami, IV, pp. 170–171; Leclerc, no. 2148.

<sup>711</sup> al-Muqaddasi, p. 184; *PPTS*, III, p. 70. The editor notes that the reference is to *Rubrica Sinopica*, a substance mentioned by Dioscorides and used by pharmacists mainly as a clyster and for diseases of the liver. See also Le Strange, p. 19. Cf. Jacut, I, 631.

<sup>712</sup> al-Tamimi, pp. 45–47.

<sup>713</sup> Issa, p. 106, no. 10; Maimonides, Glossaire, no. 149.

<sup>714</sup> Chevallier, p. 225; see figure 30.

<sup>715</sup> Uphof, p. 304.

(Shevi'it, 7:6).<sup>716</sup> Dioscorides notes that the leaves of the henna (*Kupros*), which also grows in Ashkelon, are effective in curing mouth sores, while the flowers are beneficial in curing headaches.<sup>717</sup>

**PU:** Henna figures in 4 lists of *materia medica* (T-S Ar.35.327; T-S Ar.35.366; T-S Ar.43.317; T-S NS 306.117) and in 3 prescriptions: for stopping bleeding (T-S NS 139.31), as a simple in a plaster (T-S NS 222.34), and for unknown uses (T-S Ar.38.29).

**TU:** Henna is present in a lexicon of *materia medica* (T-S AS 179.70). It also appears in medical books (T-S Ar.11.7; T-S Ar.40.66; T-S Ar.40.111; T-S Ar.40.121; T-S Ar.44.91) in pharmacopoeias (T-S Ar.45.14; T-S NS 305.212; T-S Or.1080.3.39), and in other fragments (T-S Or.1080. 9.6).<sup>718</sup>

**OMU:** al-Kindi describes various medical uses of the henna leaves, such as a preparation for treating ulcers and as a component in a preparation to cure the teeth and treat skin irritations.<sup>719</sup> Maimonides states that a cloth soaked in vinegar, henna, and rose water serves as a compress (dressing) to treat the stings of bees or wasps. The oil produced from the plant is used for curative purposes.<sup>720</sup> According to Shabbetai Donolo, henna is a soft and moist substance that should be heated with wine or liquor to be crushed,<sup>721</sup> and combined with other substances to turn it into a medication.

**TM:** Yemenite Jews use the powdered leaves to treat stomach pains and diarrhoea among infants, and also to treat burns, skin infections, and infections of the teeth and gums. The leaves of the plant are used in boiling tea to treat cancerous growths and to prepare compresses to place over them. They also used the leaves to treat smallpox, to prepare compresses to soothe headaches, to strengthen the hair and fingernails, and as a component in a preparation to treat skin diseases.<sup>722</sup> In Iraq and Iran the leaves are used to cure skin diseases and leprosy.<sup>723</sup> The extract from the outer sheath of the plant served in Arab countries to treat jaundice

<sup>716</sup> For example: Low, II, pp. 218–225; Feliks, World, pp. 270–271; Feldman, pp. 129–130.

<sup>717</sup> Dioscorides, I.124.

<sup>718</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>719</sup> al-Kindi, nos. 26, 38, 47, 105, 214, 216. Cf. Ibn Sina, p. 313.

<sup>720</sup> Maimonides, Glossaire, no. 107; al-Biruni, I, p. 132.

<sup>721</sup> Donolo, p. 14. The editor identifies this with henna.

<sup>722</sup> Reiani, no. 59. Compare uses among the Jews of Iraq in Ben-Yakov, p. 747.

<sup>723</sup> Hooper, pp. 134–135; El-Gammal, Henna; Contents of substances in the leaves, in al-Rawi & Chaakravarty, p. 59.

and nerve diseases.<sup>724</sup> In Egypt, the extract of the leaves served as an astringent and a component in medical ointments.<sup>725</sup>

**TAI:** From several 11th-century merchants' letters found in the Genizah there is evidence of trade in henna in Jerusalem, Tyre, Cairo, and other cities.<sup>726</sup> One letter describes a 'foolish' merchant from Tyre who tried to export various medicinal substances and merchandise, including henna, from Tyre to Jerusalem and to Tsoar (on the shores of the Dead Sea).<sup>727</sup> Early evidence of the cultivation of henna in the Jericho region appears in the writings of the Venerable Bede (8th cent.).<sup>728</sup> Ibn al-Bayṭār described the plant, its uses, and its various names, and he cites many writers and physicians. Among other things, Ibn al-Bayṭār says, referring to Galen, that the Ashkelon species is one of the best.<sup>729</sup> al-Badrī (Mamluk period) describes the cultivation of henna in the Jordan Valley and the cities of the al-Shām region, and the production of henna oil.<sup>730</sup> Henna was also imported into the Levant from Egypt, and it is mentioned among the products imported to Ramlah in the 16th century.<sup>731</sup>

## Honey

### A: 'asal, 'asal naḥl

**D&H:** Honey is made of flower nectar collected by worker bees in their crop, where some chemical processes occur due to enzyme activity.<sup>732</sup> In this way the honey becomes richer with the nectar in monosugars. Honey's taste and colour depend on the plant from which the nectar was collected.<sup>733</sup> The ancient Egyptians and Babylonians used honey to treat eye diseases.<sup>734</sup> In the Bible honey is mentioned in various contexts and we even come across a medicinal one (Proverbs 24:13). In the Talmud the Jewish Sages assert its medicinal uses as well. Pliny, who dedicates

<sup>724</sup> Uphof, p. 304; Constantine; Cf. Grieve, pp. 404–405.

<sup>725</sup> Ducros, p. 91.

<sup>726</sup> Goitein, Society, I, p. 155.

<sup>727</sup> Gil, II, p. 253, no. 593; Goitein, Jewry, p. 204.

<sup>728</sup> Tobler, p. 225.

<sup>729</sup> Ibn al-Baytar, al-Jami, II, pp. 41–42; Leclerc, no. 719.

<sup>730</sup> al-Badrī, p. 109.

<sup>731</sup> Cohen & Lewis, p. 55, 141; On the subject of agriculture and trade see in detail Amar, Production, p. 195.

<sup>732</sup> Putsynakova.

<sup>733</sup> Plants & Animals, XII p. 270.

<sup>734</sup> Levey, Chemistry, pp. 86, 94, 104, 571.

a whole chapter to the description of ointments, states that honey is an important component in each of them.<sup>735</sup> Dioscorides reports several medicinal uses of ‘mela’.<sup>736</sup> In antiquity as well as the Middle Ages honey was a general name, encompassing bee honey (Arabic ‘asaḷ’; Hebrew ‘devash’) and other honeys made of grapes, carobs,<sup>737</sup> or dates. The last is called ‘dibs’ in Arabic.<sup>738</sup> All kinds of sweet liquids were used for medicinal purposes.<sup>739</sup>

**PU:** Honey figures in 4 lists of *materia medica* (T-S Ar.35.229; T-S Ar.35.252; T-S NS 306.117 [2]; T-S Or.1081.J.71) and in 19 prescriptions: for eye diseases (T-S NS 218.21), cough (T-S K25.116; T-S AS 148.22), diet (T-S Ar.41.71), as an aphrodisiac (T-S NS 164.159; T-S AS 177.39), oxymel (T-S Ar.43.71 [2]), as a plaster (T-S NS 222.34), for unknown uses (T-S Ar.34.217; T-S Ar.41.125; T-S Ar.43.338; T-S AS 214.96; T-S AS 216.200; T-S NS 265.62; T-S 13J6.14) for small ‘iṭriful (T-S Ar.42.67), in one named *nashā’ Ishāq* (T-S Ar.30.16) and in another named *ma’jūn Hibat Allāh* (T-S Ar.30.16). It also features in an alchemical astrological prescription (T-S 8J14.3).

**TU:** Bee honey is mentioned in medical books as a simple in recipes for unknown uses (T-S Ar.39.65; T-S Ar.42.46; T-S AS 162.132) and for treating eye complaints with collyria and venesection (T-S AS 179.59), pains in the eye, dim vision, and excessive lachrymation (T-S NS 90.6v), headache and brain diseases [taken orally or applied to the forehead; T-S Ar.40.157], umbilical hernia and incessant crying among children (T-S Ar.40.160), diarrhoea (T-S Ar.42.37r), wind, warts, dysuria, dysmenorrhoea and hard swellings (T-S Ar.42.151), fever, black bile, and phlegm (T-S NS 306.74), sciatica, varicose veins and venesection (T-S NS 306.172), obstruction, wind, pleurisy, and trembling (T-S AS 179.110), paralysis, as a facial lotion and for abscesses (T-S AS 184.3) and in an invalid’s diet prepared from different kinds of food including honey, fish, milk (T-S AS 182.308). Honey is also mentioned in a fragment that cites Galen regarding several simples (T-S Ar.41.13) and in a

<sup>735</sup> Pliny, XII: 54; Donolo, p. 12.

<sup>736</sup> Dioscorides, II:101.

<sup>737</sup> On the use of carobs in making ‘rubḅ’ (jam) and sweets in Shechem (Nablus) and in the region of ‘al-Sham’ see Ibn Battuta, pp. 128–129.

<sup>738</sup> These kinds of honey were traded in Palestine and the surrounding regions, and are mentioned, for instance, in Ashtor, Trade, p. 280; Praver, Colonial, p. 443. Regarding honey derived from plant life, see a detailed account in Amar, Industrial, pp. 54–58.

<sup>739</sup> Maimonides, Regimen, I:12; *Ibid.*, p. 41, n. 126.

lexicon of *materia medica* (T-S Ar.41.37; T-S Ar.41.61; T-S Ar.43.225; T-S AS 181.109r).<sup>740</sup>

**OMU:** al-Kindī reports that ‘asal’ was used as a component in tooth-paste<sup>741</sup> and in other medicinal remedies. Even though honey was used intensively in Islamic regions in the middle ages, it was sometimes considered a base rather than a medicinal substance.<sup>742</sup> Benevenuto wrote that honey was an important component of a syrup named ‘Jerusalemite electuary’ which was used to treat cataract.<sup>743</sup> Maimonides informs us about a wide range of uses for honey in the medieval Levant: as a component in many remedies to treat symptoms such as rheumatism,<sup>744</sup> chest and lung pains, excessive sweating and salivating, and as a dietetic food. Honey was included in remedies to treat burns, a component in various clysters,<sup>745</sup> and in theriac. To treat bee or wasp stings Maimonides recommends drinking oxymel (honey with vinegar).<sup>746</sup> In his ‘asal’ entry, Ibn al-Bayṭār describes the use of honey in many remedies, including some to cure intestinal diseases and stomach disorders.<sup>747</sup> Dāwud al-Anṭākī asserts in his entry ‘Dibs’ that this name applies to the thick juice of both grapes and dates. Once they are cooked and no longer fluid they are called ‘rubb’ (jam).<sup>748</sup>

**TAI:** From a letter found in the Genizah which the writer, Natan ha-Cohen from Ashkelon, sent to Ola ha-Levi in Fustat (1100 CE), we learn that bee honey was exported from the Land of Israel to Egypt.<sup>749</sup>

Many fragments record the trade in wax and honey in the Middle East by Jewish traders; it was mainly imported from the Land of Israel, Tunisia, and Syria.<sup>750</sup>

Moses Poriat of Prague describes the various kinds of products in the Jerusalem market in the 17th century and asserts that honey (‘asal’) was eight times more expensive than carob honey (‘harob dibs’).<sup>751</sup>

<sup>740</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>741</sup> al-Kindi, p. 108, no. 96.

<sup>742</sup> *Ibid.*, p. 304, no. 200.

<sup>743</sup> Benevenuto, p. 37.

<sup>744</sup> Maimonides quotes this from al-Tamimi; Maimonides, *Aphorisms*, 22:57.

<sup>745</sup> *Ibid.*, 16:8, 45; 20: 42; 221:17–18, 61. Cf. al-Biruni, 1:225.

<sup>746</sup> Maimonides, *Poisons*, pp. 109, 124.

<sup>747</sup> Ibn al-Baytar al-Jami, III, pp. 121–123; Leclerc, no. 1542.

<sup>748</sup> al-Antaki, pp. 150–151.

<sup>749</sup> Gil, III, pp. 484–486, no. 588.

<sup>750</sup> Gil Kingdom, I, p. 681; IV, p. 943 (see index—14 fragments mention honey). Goitein, *Society*, I, p. 125; pp. 151, 219; II, p. 271; p. 248.

<sup>751</sup> Ya’ari, *Travels*, p. 280.

## Indigo

*Indigofera tinctoria* (Fabaceae) **A: nīl**

**D&H:** Domesticated plant for industrial dye, probably originating in India. The blue dye is made from the leaves, which are feathery; the fruits are pods. The plant's spread and its utilization all over the known world are owed to the Islamic conquest. It was grown, for example, in the Jordan valley, a section of the Rift Valley.

**PU:** Indigo figures in 6 lists of *materia medica* (T-S Ar.30.274; T-S Ar.39.139; T-S Ar.39.450; T-S Ar.39.487; seeds, T-S Ar.43.317; Indian, T-S AS 183.159) and in a prescription for unknown uses called the small aṭrīfal (T-S Ar.42.67).

**TU:** Indigo is mentioned in a medical book (T-S AS 184.234).<sup>752</sup>

**OMU:** Ibn Sīnā writes that the plant is an astringent, heals skin diseases, swellings, and lesions.<sup>753</sup> Ibn al-Bayṭār states that the indigo noted by Dioscorides and Galen in their books is a different plant, so some physicians made mistaken use of it. However, he comments that indigo was used to heal swellings, treat high temperature, reduce sexual lust, treat cough, stop the menstrual bleeding, and treat various skin diseases and burns.<sup>754</sup> Dāwud al-Anṭākī describes similar medical uses.<sup>755</sup>

**TAI:** Indigo was one of the most important commodities for the Genizah society. Different kinds (mainly according to their production areas) are mentioned in dozens of fragments, mainly merchants' correspondence.<sup>756</sup>

## Jujube

Chinese Jujube, *Ziziphus vulgaris* (Rhamnaceae), **A: 'unnāb**<sup>757</sup>

**D&H:** A spiny deciduous tree (8 m high), with oblong leaves and clusters of small greenish-yellow flowers and brown-black oval fruits.<sup>758</sup> The plant and its various parts have been used for curative purposes since

<sup>752</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>753</sup> Ibn Sina, I, p. 374.

<sup>754</sup> Ibn al-Baytar, al-Jami, IV, pp. 186–187.

<sup>755</sup> al-Antaki, pp. 299–300.

<sup>756</sup> Gil, Kingdom, I, p. 939 (75 references in the index!); Goitein, Society, see indices.

<sup>757</sup> Maimonides, Glossaire, no. 291; Leclerc, no. 1116; Issa, p. 192, no. 4; Dinsmore & Dalman, no. 393; al-Biruni, I, p. 232.

<sup>758</sup> Chevallier, p. 281; see figure 31.

early times. Hippocrates recommends its use against putrescent wounds; Pliny reports that chewing its fruit prevents diseases in the digestive system; and Dioscorides, in his entry *Paliouros*, lists such medical uses as curing cough, eliminating stones from the urinary tract, causing urination, and treating bites, stings, and poisonings.<sup>759</sup> The plant originates in China or India where it still grows today and is listed among the five most important fruits in that region. Today it is also widespread in various countries including the United States and New Zealand.<sup>760</sup> The common jujube is definitely identified with the ‘shezifin’ mentioned in the Mishna (Kilayim, 1:4) and in the Tosefta (Peah, 1:7).<sup>761</sup> Medieval commentators identify ‘shezifin’ with ‘unnāb’,<sup>762</sup> and the plant is also known by that name today.<sup>763</sup>

**PU:** Jujube figures in 9 lists of *materia medica* (T-S Ar.34.146; T-S Ar.35.252; T-S Ar.35.328; T-S Ar.35.366; T-S Ar.51.53; T-S AS 179.132; T-S AS 182.222; T-S NS 279.57; T-S NS 306.117) and in 9 prescriptions: for haemorrhoids (T-S Ar.44.181), fever (T-S AS 155.277), a diet (T-S Ar.41.71), and prescriptions for unknown uses (T-S Ar.34.239; T-S Ar.39.184; T-S Ar.40.141; T-S NS 305.76(75); T-S NS 327.97; T-S 12.33).

**TU:** Jujube is mentioned in medical books in prescriptions for the treatment of bubo and scrofula (T-S Ar.39.297), as a simple in lexica of *materia medica* (T-S AS 180.32r; T-S AS 180.189; T-S AS 181.193) and in a recipe for a paste for unknown uses (T-S AS 182.37).<sup>764</sup>

**OMU:** al-Kindī reports on the use of the ‘unnāb’ as a medicine for treating erysipelas and other skin diseases.<sup>765</sup> Maimonides describes the medical use of the jujube by citing Abū Marwān Ibn Zuhr: ‘The fruit has the ability to benefit those with diseases of the lung, the gullet’. It was considered a moist drug.<sup>766</sup> al-Qazwīnī reports the use of ‘unnāb’ leaves to treat eye pains and also to ‘calm’ the blood and dry it.<sup>767</sup>

<sup>759</sup> Dioscorides, I.121.

<sup>760</sup> Hill, p. 423.

<sup>761</sup> Low, III, pp. 138–139; Feliks, Plants, p. 160.

<sup>762</sup> For example: Maimonides, Glossaire, no. 291; Estori ha-Parhi, pp. 744, 764.

<sup>763</sup> Dinsmore & Dalman, no. 393.

<sup>764</sup> Isaacs & Baker, see indices.

<sup>765</sup> al-Kindī, nos. 23, 31.

<sup>766</sup> Maimonides, Aphorisms, 21:72; 22:51.

<sup>767</sup> al-Qazwīnī, p. 227. Cf. Ibn al-Baytar, al-Jami, III, pp. 140–141; Leclerc, no. 1594; al-Antaki, p. 241; Ibn Sina, p. 399.



**TM:** The fruit contains up to 20% sugar and is eaten fresh or dried. It is also used for cooking and baking. The strong wood is used in carpentry and its bark serves to process leather.<sup>768</sup> The Jews of Yemen and Iraq used the dried fruit to regulate digestion and respiration, to increase appetite, to strengthen the lungs and the body, to treat burns and shock, and to cleanse the blood.<sup>769</sup> The plant is extremely widespread in Iran and Iraq, mainly along the caravan routes. In Asia the fruit is taken for soothing and curative purposes, and the leaves for treating constipation and preparing an ointment to treat burns.<sup>770</sup> In China, where the plant is very common, it serves for the production of a medication against cough.<sup>771</sup> The fruit secretes a mucous substance that is used to cure chest diseases.<sup>772</sup> The fruits and leaves contain alkaloids that repress the taste for anything sweet, and reduce the blood sugar level.<sup>773</sup>

**TAI:** al-Muqaddasī lists “unāb” among the widespread crops grown in the district of Falasṭīn.<sup>774</sup> Jujube is found in the Genizah in a list of fruits and medicinal substances imported into Alexandria.<sup>775</sup> During the Mamluk period it featured among the agricultural crops of the al-Shām (Greater Syria) region.<sup>776</sup> Abū al-Qassām al-Ghassānī notes in his treatise (1585) that the “unnāb” grows in al-Shām and in Egypt.<sup>777</sup>

## Kohl

**D&H:** Kohl is a fine powder associated with the darkening of eyelids, and it was also used for remedial purposes. At least two main substances were termed ‘kohl’ or ‘pukh’ and ‘ithmid’: galena and antimony. ‘Pukh’, or eye-shadow, appears in the Bible in connection with Queen Jezebel in the Book of Kings (II, 9:30) and also in Jeremiah (4:40). A similar mention is made in Ezekiel (23:40), translated in the Vulgate as ‘stibium.’<sup>778</sup> The Jewish Sages refer to kohl as ‘kaḥla’ or ‘pukh’ and often

<sup>768</sup> Uphof, p. 562; *Plants & Animals*, X, p. 121; Chizik, p. 720.

<sup>769</sup> Reiani, no. 127. References in Ben-Yakov, p. 742.

<sup>770</sup> Hooper, p. 188.

<sup>771</sup> Chopra et al., p. 71.

<sup>772</sup> Uphof, p. 563.

<sup>773</sup> Results of chemical research on the contents of the fruit and leaves, in Palevitch et al., p. 161.

<sup>774</sup> al-Muqaddasi, p. 181.

<sup>775</sup> Goitein, *Society*, I, p. 213.

<sup>776</sup> al-Qalqashandi, IV, 87.

<sup>777</sup> al-Ghassani, p. 206.

<sup>778</sup> *HE*, III, p. 472; *EI*, V, p. 536.

mention its cosmetic and medicinal uses.<sup>779</sup> According to Dioscorides, 'stimmi' (antimony) was a drying drug, which was used to stop bleeding, clean wounds, and heal eye diseases. *Molubdaina* (galena) had similar uses.<sup>780</sup>

## 1) Antimony

*Stibium* (Sb), A: 'antīmūn, 'ithmid<sup>781</sup>

**D&H:** Antimony is a metallic substance of crystalline texture. From the time of ancient Egypt (3000 BCE) to the present its black colour has made it suitable for painting and darkening the eyelids. For cosmetic and medicinal purposes, natural antimony sulphide (Sb<sub>2</sub>S<sub>3</sub>) made of stibnite powder has been commonly used. The historical provenance of stibnite was Iran and Arabia, and it was sometimes referred to as 'mestem' (Dioscorides and Pliny called this substance 'stibium').<sup>782</sup> In the medieval period it was also used to treat lepers.<sup>783</sup>

## 2) Galena

*Plumbum sulphidum* (PbS), A: **kuḥl**

**D&H:** Galena is a mineral, a composite of sulphate and lead containing up to 86.5% lead. It is the most important source of lead in the world, and sometimes it is even a source of silver (up to 2%). In nature it appears as grey cubic crystals which have a shiny metal colour. In the Land of Israel ancient galena mines exist on Mount Hermon.<sup>784</sup>

**PU:** Different kinds of kohl figure in 6 lists of *materia medica* (T-S Ar.30.274; T-S Ar.35.366; T-S Ar.39.487; T-S Ar.39.487; T-S AS 152.131; [iṣfahānī—Iranian kind] T-S Ar.11.16) and in 5 prescriptions: for eye diseases (T-S NS 218.21; [iṣfahānī] T-S Ar.11.16; T-S NS 321.49 [kohl recipe]; T-S AS 153.89 [collyrium]; T-S AS 161.23; T-S Ar.44.162).

**TU:** Prescriptions containing 'kuḥl' are found in several fragments of medical books. The main uses are treating eye complaints: 'hot and

<sup>779</sup> On the history of antimony and its uses see Gordon, *Medieval*, p. 664.

<sup>780</sup> Dioscorides, V. 99–100.

<sup>781</sup> Maimonides, *Glossaire*, no. 27.

<sup>782</sup> *HE*, III, pp. 472–473. For further information on this substance and its uses in Europe in the Middle Ages see *ibid.*, pp. 473–476; *EI*, V, p. 356.

<sup>783</sup> Cawston.

<sup>784</sup> *HE*, XXVII, pp. 761–762; see figure 32.

burning sensation in the eye' (T-S K25.83), 'redness, itching and excessive lachrymation' (T-S Ar.39.228; T-S Ar.42.5). A recipe for 'kuḥl' is also found (T-S Ar.11.16; T-S Ar.39.273; T-S Ar.43.80). Antimony, 'ithmid', appears in a lexicon of *materia medica*; in this case the author quotes the prophet Muḥammad saying, 'It sharpens vision and makes hair grow' (T-S Ar.39.467). Antimony features in list of simples used for eye diseases (T-S NS 306.48). Kohl prepared from antimony is one of the recipes for treating hypertrophy and atrophy of the canthi (treatment includes application of eye powder or drops, and even cautery) (T-S Ar.41.24).<sup>785</sup>

**OMU:** According to Maimonides, antimony is a cold and dry substance,<sup>786</sup> used only externally. al-Bīrūnī reports the use of 'ithmid' (antimony) as a cure for eye diseases and mentions its toxicity.<sup>787</sup> al-Qazwīnī states in his entry 'antīmūn' that it is 'ithmid', described by Aristotle as 'a substance well known throughout the East'. al-Qazwīnī adds that 'antīmūn' is as beneficial to the eye as 'kuḥl' in removing defective tissues, strengthening the eye's nerves, and treating inflammations and pains, mainly among the elderly.<sup>788</sup> In late medieval Europe antimony was used to induce vomiting, but since it was a strong drug and had toxic effects, this use slowly declined.<sup>789</sup>

**TAI:** In a letter (dated 1064) from Abun Ben Ṣedaqa (Jerusalem) to Nahray Ben Nissim (Fustat), the kohl trade in Jerusalem is described.<sup>790</sup> In another letter found in the Genizah (dated 1040), Abraham Ben Shmu'el of Ramlah asks Shlomo Ben Yehuda of Jerusalem for 'some kuḥl to clear the white colour from my little daughter's eye'.<sup>791</sup> The latter was engaged in trading *materia medica*, including antimony.<sup>792</sup> Many fragments dating to the 11th and 12th centuries mention the trade in 'kohl' or 'pukh' in between Cairo, Alexandria, Jerusalem, Ramlah, Bilbays, and Qayrawān. The Maghreb, and especially Sicily, were two of the important sources of antimony.<sup>793</sup>

<sup>785</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>786</sup> Maimonides, Aphorisms, 21:87.

<sup>787</sup> al-Biruni, II, p. 70.

<sup>788</sup> al-Qazwini, p. 186; Ibn al-Baytar, al-Jami, I, pp. 12–13; Leclerc, no. 18. Cf. Ibn al-Baytar, al-Jami, IV, p. 53; Leclerc, no. 1898; al-Antakī, pp. 37–38.

<sup>789</sup> HE, III, pp. 475–476.

<sup>790</sup> Gil, II, p. 234, no. 500.

<sup>791</sup> Gil, I, p. 421, no. 230.

<sup>792</sup> Goitein, Society, I, pp. 154, 155, 197, 334.

<sup>793</sup> Gil, Kingdom, I, p. 560, no. 564; p. 681; IV, see index (16 references); Goitein, Society, I, p. 29, 100, IV, pp. 223–224, 319, 327, 329.

**Lac**

*Laccifer lacca* (Kerridae), **A: lakk**

**D&H:** The Kerridae family consist of many aphid species, the most important being *Laccifer lacca*. It grows in South-East Asia on various tree species. The caterpillars, after hatching from their eggs, dwell on the host tree and suck out their food. The liquids that were drawn from the tree undergo a bio-chemical process in the larvae and are secreted from a special gland as a liquid, which transferred into lac. This substance is collected from the trees and sold as a reddish-brown colouring material and a medicinal substance. The use of lac expanded during the middle ages.

**PU:** Lac figures in 4 lists of *materia medica* (T-S Ar.39.487; T-S Ar.42.15; T-S AS 176.22 [2]; T-S Ar.30.274) and in 2 prescriptions for unknown uses (T-S Ar.42.15 [2]), one of which is a powder (T-S Ar.40.87).

**TU:** Lac is mentioned in medical books in recipes for a dressing applied to the liver area and for removing wax and resins (T-S Ar.45.40; T-S AS 176.83); also in medical books (T-S Ar.40.104; T-S NS 90.80; T-S NS 222.44), books on *materia medica* (T-S Ar.44.204), and another fragment (T-S NS 297.115).<sup>794</sup>

**OMU:** Ibn Sīnā reports that lac helps in weight loss and it reduces heart rate, strengthens the liver, and cures various ailments.<sup>795</sup> Ibn al-Bayṭār cites Ibn Sīnā and al-Rāzī in saying that it opens obstructions and fortifies internal organs.<sup>796</sup> Dāwud al-Anṭākī notes that lac is used to treat cough, asthma, swellings, and diseases of internal organs such as the liver and the kidneys; it helps in losing weight and opening obstructions. It was also used to polish swords and as an ingredient in red ink.<sup>797</sup>

**TAI:** Lac was an important commodity in the medieval Mediterranean according to dozens of Genizah fragments from merchants' correspondence. In most cases it features as an export from Egypt to Sicily and the Maghreb.<sup>798</sup>

<sup>794</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>795</sup> Ibn Sina, I, p. 351.

<sup>796</sup> Ibn al-Baytar, al-Jami, IV, p. 110.

<sup>797</sup> al-Antaki, p. 254.

<sup>798</sup> See Gil, Kingdom, IV, p. 930, 60 documents in the indices; Ben-Sasson, p. 708, 30 documents, all referring to lacca. Gil, II, p. 430, no. 176, III, p. 272, no. 508.

## Ladanum

*Cistus ladaniferus* (Cistaceae) **A: lādhan, lādan**<sup>799</sup>

**D&H:** The name of the genus derives from the shape of the fruit, which resembles a box (Greek *kiste*).<sup>800</sup> The resin extracted from the leaves and stems of the ladanum plant is bitter and dark brown in colour; the word ladanum exists in many languages. This resin was in common use in the ancient world. Some Bible researchers identify the Hebrew word ‘lot’, mentioned in the story of Joseph and his brothers in connection with the ‘fruits of the land’ (Genesis 37:25; 43:11), with ladanum resin. The Sages record ladanum in a list of various perfumes (Mishna, Shevi‘it, 7:6).<sup>801</sup> Classical physicians such as Galen describe the plant and state its uses (treating colds, coughs, heart disease, intestinal cramps, burns, and wounds, and regulating menstruation). Dioscorides describes two species of ladanum (*Kostos arren, thelus*; red and white) and lists their medical uses. An additional species is the ladanum of which the resin is extracted in a special manner: when sheep nibble the bushes the resin remains stuck to their beards, and the substance, which resembles white wax, can be collected with the help of special combs. The best quality resin, which is produced in Cyprus, is of a greenish shade. It is oily and scented and serves as an external and internal medication. Ladanum leaves are used as medication against dysentery.<sup>802</sup>

**PU:** Ladanum figures in 12 lists of *materia medica* (T-S Ar.35.366; T-S Ar.39.450; T-S Ar.51.53; T-S AS 176.22; T-S AS 176.151; T-S AS 179.132; T-S AS 182.258; T-S AS 184.187; T-S AS 184.234; T-S NS 279.57; T-S NS 306.106; T-S Ar.35.327) and in a prescription for unknown uses (T-S AS 219.163).

**TU:** Ladanum is mentioned in medical books in a recipe for an embrocation to treat leucoderma (T-S AS 180.16), and as a simple in a lexicon of *materia medica* (T-S Ar.35.328).<sup>803</sup>

**OMU:** al-Kindī reports the use of ladanum to brush the teeth and to prepare a medical ointment.<sup>804</sup> According to Shabbetai Donolo the resin,

<sup>799</sup> Maimonides, Glossaire, no. 208; Dinsmore & Dalman, nos. 200–201; Issa, p. 50, no. 4.

<sup>800</sup> Dafni, Mandrakes, p. 43.

<sup>801</sup> Feliks, World, p. 272.

<sup>802</sup> Dioscorides, I.126, 128.

<sup>803</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>804</sup> al-Kindi, nos. 99, 144.

melted in oil or honey, serves as a medication.<sup>805</sup> Maimonides asserts that 'lot' is a component in a medication (together with the milk of goats and bears) to strengthen the penis and constrict the glans.<sup>806</sup> Ibn al-Bayṭār notes similar uses, with the addition of curing haemorrhoids and halting diarrhoea.<sup>807</sup>

**TM:** Ladanum resin is a medicinal substance and a typical incense spice in the Mediterranean basin. The use of the substance was widespread during the Middle Ages, and Ibn Māsawayh notes that the resin comes from Syria. From the writings of other physicians we learn of the use of this substance to treat internal diseases affecting the intestines and the respiratory tract. TM in the Near East and in Jewish communities applies the resin for similar purposes.

**TAI:** Ibn Māsawayh states that ladanum is from the al-Shām region, and he notes its properties and uses, including improving the smell of men and women.<sup>808</sup>

## Lapis lazuli

$\text{NaAlSiO}_4 \cdot \text{CaSO}_4$  **A:** *lāzward*, *ḥajar lāzward*

**D&H:** Semi-precious sapphire crystal, used mainly for medicine. Dioscorides describes the stone and its medical uses, namely treatment of scorpion sting and eye diseases.<sup>809</sup> Used for ornaments, jewellery and trinkets.

**PU:** Lapis lazuli figures in 8 lists of *materia medica* (T-S Ar.30.274; T-S Ar.34.341; T-S Ar.39.487; T-S Ar.43.338; T-S AS 181.193; T-S AS 184.234; T-S NS 224.62; T-S Ar.39.487) and in 7 prescriptions: for hallucination (T-S 16.291), as an aphrodisiac (T-S NS 164.159), for unknown uses (T-S Ar.30.65; T-S NS 327.97; T-S NS 297.17; T-S 13J6.14), and one in which 'lāzward 'armani' is a simple in a compound medicine (T-S AS 177.417).

**TU:** Lapis lazuli is mentioned in medical books in recipes for theriac, to stop excessive lachrymation, to helping the eyelashes to grow (T-S

<sup>805</sup> Donolo, p. 18.

<sup>806</sup> Maimonides, *Sexual*, 8:8; Maimonides, *Aphorisms*, 21:71.

<sup>807</sup> Ibn al-Baytar, *al-Jami*, IV, pp. 90–91; Leclerc, no. 1999.

<sup>808</sup> Levey, *Ibn Masawayh*, p. 408. Amar notes that ladanum was a cultivated crop in the Land of Israel and the resin derived from it served to strengthen the nerves. See Amar, *Substances*, p. 52.

<sup>809</sup> Dioscorides, *V*, 157.

Ar.42.299; T-S NS 90.28), and for unknown uses (T-S NS 327.97; T-S AS 180.171). It also appears in ophthalmology books (T-S Ar.43.166; T-S NS 327.21), pharmacopoeias (T-S Ar.40.91; T-S Or.1080.3.39), and other fragments (T-S Ar.38.9; T-S NS 228.14; T-S NS 297.56).<sup>810</sup>

**OMU:** Ibn Sinā writes that lapis lazuli eliminates warts, makes the lips beautiful and thick, is a diuretic, cleans the internal organs, and eases pain in the kidneys.<sup>811</sup> Ibn al-Bayṭār cites al-Ghāfiqī saying that it helps people who suffer from black bile, stops menstruation, helps to reduce pain in the bladder, makes the hair curly, beautifies the lips, and treats leprosy.<sup>812</sup> Dāwud al-Anṭākī states that it treats leprosy and other skin diseases, helps mad people, remedies eye ailments, improves the general health of the human body and makes the patient happy.<sup>813</sup>

**TAI:** Lapis lazuli was traded in Egypt, Sicily, and several cities in North Africa (the Maghreb).<sup>814</sup> One of the best-known 11th century dealers in the commodity was Nahary b. Nissim of Fustat (T-S 12.251).<sup>815</sup>

## Lavender

*Lavandula officinalis* or *Stoachas Lavandula stoechas* (Lamiaceae), **A: ištūkhūdūs**<sup>816</sup>

**D&H:** A perennial shrub (1 m), with spikes of violet-blue flowers extending above the foliage.<sup>817</sup> The scientific name derives from the Latin 'lavare', to wash. In the past the plant was used to perfume the water used for washing, and for curative purposes. In the Mishna it is said that one should not eat lavender on the Sabbath because it is not a food for healthy people (Shabbat, 14:3), the implication being that it was used as medicine. Dioscorides describes lavender (*Stiochas*) and records its names and medical uses. He notes that it serves as a component in medications against poisons and to treat chest problems.<sup>818</sup> In the Middle Ages the

<sup>810</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>811</sup> Ibn Sina, I, p. 351.

<sup>812</sup> Ibn al-Baytar, al-Jami, IV, p. 91.

<sup>813</sup> al-Antaki, p. 249.

<sup>814</sup> Gil, Kingdom, I, pp. 564, 686; IV, 933 (there are about 15 references in the index).

<sup>815</sup> Goitein, Society, I, pp. 154, 203, 208, 210.

<sup>816</sup> Maimonides, Glossaire, no. 6, Issa, p. 106, no. 5.

<sup>817</sup> Chevallier, p. 107.

<sup>818</sup> Dioscorides, III.31.

use of lavender increased, and it became a widely used condiment plant, found extensively in the gardens of European countries.<sup>819</sup>

**PU:** Lavender figures in a list of *materia medica* (T-S AS 182.222) and in 13 prescriptions: for hallucination (T-S 16.291), weak eyesight and migraine (Maimonides; T-S Ar.30.286 [2]), an invalid's diet (T-S Ar.42.189), plaster (T-S NS 222.34) for unknown uses (T-S K25.212; T-S AS 216.200; T-S AS 155.365; T-S NS 297.260; T-S Or.1081.1.66; T-S 13J6.14), in one named the small atrifal (T-S Ar.42.67), as a compound (T-S AS 177.417), and in an alchemical astrological preparation (T-S 8J14.3).

**TU:** Lavender is mentioned in medical books in recipes for the treatment of pain in the joints (refers to the preponderance of yellow and black bile; T-S Ar.39.157), eye inflammation, dim vision and widening of the pupils (eye drops and potions: found in a letter addressed to higher authorities; T-S NS 327.93), eye complaints, lippitude, inversion and lice of the eyelids (T-S AS 179.235) and a compound (T-S AS 177.417). It also appears as a simple in a prescription for unknown uses (T-S NS 90.51v).<sup>820</sup>

**OMU:** The physician Assaf reports on the use of lavender to treat malaria, to dress wounds, and for hair growth.<sup>821</sup> Maimonides states that lavender flowers are a component in medications to lengthen life, to strengthen the heart, and to treat asthma. The plant was a widespread drug and was considered as hot and dry.<sup>822</sup> al-Bīrūnī and al-Ghāfiqī cite many physicians in describing the use of the plant to treat diseases of the chest, to cleanse the brain, and to cure infections and swellings.<sup>823</sup> Ibn al-Bayṭār cites various physicians who dealt with the uses of the plant. Listed among the widespread uses are treating epilepsy, 'hard' stomach, pains of the joints and belly, diseases of the skin, brain concussion, and weak heart. In addition to its use to strengthen the body, the substance served as a component in a medication to treat the bite of a lion.<sup>824</sup> Saladino

<sup>819</sup> Loewenfeld & Back, p. 158.

<sup>820</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>821</sup> Assaph, IV, 403.

<sup>822</sup> Maimonides, Regimen, 3:8; 3:11; Maimonides, Asthma, 12:1; Maimonides, Aphorisms, 21:69.

<sup>823</sup> al-Biruni, I, pp. 23–24; II, p. 72; al-Ghāfiqī, no. 28. Cf. Ibn Sina, p. 252.

<sup>824</sup> Ibn al-Bayṭār, al-Jami, I, pp. 24–25; Leclerc, no. 62. Cf. al-Antaki, pp. 42–43. See also Ibn al-Bayṭār, al-Jami, II, p. 58; Leclerc, no. 791.



d'Ascoli claims that lavender and its flowers were a hot and dry drug, and could be preserved for a year or two.<sup>825</sup>

**TM:** The Arabs of Israel use lavender to strengthen the body and the nervous system and to treat headache. It is also used to relax the heart, to cleanse the kidneys, and to improve appetite. Desert lavender is a medication against fever and cold.<sup>826</sup> In the past lavender was used to cure wounds and bites, for soothing, for disinfecting, for gargling, and to repel lice. It was also a stimulating drug, inducing urination, and it served as a sneezing powder.<sup>827</sup> In Iran, toothed serrated lavender (*Lavandula dentata*) was used to treat malaria, colds, wounds, and skin rash.<sup>828</sup> Yemenite Jews used various types of lavender to treat colds, to ease breathing, to strengthen the brain, to calm the nerves, to heal the womb, and to treat headaches and rheumatism.<sup>829</sup> In Europe various types of lavender were used to treat asthma, lung diseases, headaches and migraines, and to strengthen the heart. They were also used to cure wounds and cuts, and served as a stimulating and carminative drug.<sup>830</sup>

**TAI:** Lavender is listed among the merchandise exported from the region (the ports of the Land of Israel and Egypt) to Europe during the period of Crusader rule (12th–13th cent.) and even afterwards.<sup>831</sup>

## Lead

**Pb, A:** lead—**raṣāṣ**, white lead (Ceruse)—**ʿasfīdāj**, **ʿasbīdāj**, black lead—**ʿusrub**

**D&H:** Lead is a soft metal of a blue-grey colour and can be cut. It oxidizes quickly and creates various compounds. The main mineral of lead in nature is galena (see the entry for Kohl), which contains 86.5% lead, and the metal is produced from it by a simple industrial process.<sup>832</sup> White lead is a basic carbonate that previously served as a pigment.<sup>833</sup> Lead is

<sup>825</sup> Saladino, p. 81. Cf. Maimonides, Aphorisms, 21:69.

<sup>826</sup> Dafni, Edible, pp. 14–15.

<sup>827</sup> Plants & Animals, XI, p. 63.

<sup>828</sup> Hooper, p. 134.

<sup>829</sup> Reiani, no. 58.

<sup>830</sup> Grieve, pp. 467–472. See contents of substances and their uses in Uphof, p. 304; Loewenfeld & Back, p. 158.

<sup>831</sup> Venice Laws, p. 285; Giovanni Scriba, nos. 425, 426. On this subject see also Ash-tor, Levant, p. 53; Praver, Colonial, p. 480.

<sup>832</sup> HE, XXVI, p. 761. In detail: Noriagu.

<sup>833</sup> Maimonides, Glossaire, no. 29.

one of the first seven metals in use in the ancient world. The Bible relates that Eleazar the priest commanded the Children of Israel to purify lead vessels (Numbers 31:22). In ancient Egypt the metal was used to make vessels, to decorate pottery, for soldering, and for medicine. In the Ebers papyrus lead is mentioned as a toxic substance. Even in Babylon, India, and China the metal was used for industrial and for medicinal purposes. The Phoenicians mined lead in Spain and in Cyprus, and the Romans used it to make pipes and roof tiles.<sup>834</sup> In Mesopotamia, white lead was an amulet and was made into an ointment to spread over bruises.<sup>835</sup> Red lead was used to fashion beads for medical rites and an ointment was also made from it.<sup>836</sup> Dioscorides describes *Molubdos* and its derivatives: lead water, rinsed lead, burnt lead, and lead stone. The description includes methods of production, toxicity, and medical uses.<sup>837</sup>

**PU:** Lead and white lead figure in 7 lists of *materia medica* (lead, T-S Ar.11.16; white lead, T-S Ar.34.341; T-S Ar.35.366; T-S AS 184.234; T-S AS 182.222; T-S AS 177.139; T-S NS 279.57) and in 8 prescriptions: for eye diseases (lead, T-S Ar.11.16; T-S Ar.42.60; white lead, T-S Ar.42.60; T-S AS 161.23; T-S NS 306.48), as an aphrodisiac (T-S NS 164.159), against itch (T-S Ar.39.335), and for unknown uses (T-S AS 183.216).

**TU:** White lead is mentioned in several recipes found in medical books: a kohl recommended for hot and burning sensation in the eye (with gum arabic, saffron, and cannabis; T-S K25.83r), a remedy for children with umbilical hernia and incessant crying (T-S Ar.40.160), and for skin lotions and poultices to heal pustules and remove scabs, citing Galen (T-S Ar.42.22). It is also found in some ophthalmology recipes: collyrium (T-S AS 153.89; T-S AS 180.163), eye drops (T-S AS 219.152), and to treat trachoma and ulcers (T-S AS 183.201). It features as a simple in a prescription for unknown uses; one of these was written by the anonymous pharmacist known as al-Dimashqī (the Damascene; T-S Ar.39.65). In a medico-philosophical text it also appears as an agent for facial skin whitening used by women (T-S Ar.39.434).<sup>838</sup>

**OMU:** al-Kindireports on white lead, which is a component in medications for the treatment of swellings in the anal area, in dressings for

<sup>834</sup> Noriagu; *HE*, XXVI, p. 762.

<sup>835</sup> al-Kindi, p. 229, no. 8.

<sup>836</sup> al-Kindi, p. 228, no. 6.

<sup>837</sup> Dioscorides, V, 95–98.

<sup>838</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

haemorrhoids, and in other medicines for eye treatment.<sup>839</sup> al-Qazwīnī describes lead in an entry, and writes that its main medical use is in preparing dressings to prevent orgasm.<sup>840</sup> In his entry white lead he describes the medicinal use of the substance to treat scorpion stings, to eliminate fleas, to remove dead skin, to refresh the skin, and to treat burns.<sup>841</sup> Ibn al-Bayṭār describes lead and its medical applications by classical and Arab physicians, and states that it was used mainly as a component in medications for treating wounds, including putrid and cancerous ones, and to treat the bite of a crocodile and the sting of a sea scorpion.<sup>842</sup> Describing the white lead, Ibn al-Bayṭār cites classical and contemporary physicians who recommend the use of the substance in treating wounds, burns, headaches, eye diseases, and cough.<sup>843</sup>

**TM:** For the Jews of Iraq lead was mainly a charm against the evil eye and panic.<sup>844</sup> In Iran and Iraq white lead was a medicine against diarrhoea and for relieving pain.<sup>845</sup>

**TAI:** The trade in white lead is mentioned in a few Genizah fragments dealing with commerce between Alexandria, Buṣīr, Cairo, Mahdiyya, Mazara, and Palermo. The main source for lead as well as white lead was Sicily; sometimes it reached Egypt via the Maghreb.<sup>846</sup>

## Lemon

*Citrus limon* (Rutaceae), **A:** **līmūn, sharāb līmūn** (lemon potion)

**D&H:** Evergreen tree, with light green, toothed leaves.<sup>847</sup> The history of the appearance of the lemon in this region is vague and controversial. Some claim that the plant reached the region together with the orange and other citrus fruit trees.<sup>848</sup> Sources indicate the presence of the tree in the Land of Israel from the end of the 9th century and its dissemination

<sup>839</sup> al-Kindi, nos. 35, 128, 130, 132, 161, 172, 173.

<sup>840</sup> al-Qazwini, p. 184.

<sup>841</sup> *Ibid.*, p. 186.

<sup>842</sup> Ibn al-Baytar, al-Jami, II, pp. 139–141; Leclerc, no. 1042. Cf. al-Antaki, p. 168.

<sup>843</sup> Ibn al-Baytar, al-Jami, I, pp. 31–32; Leclerc, no. 73.

<sup>844</sup> Ben-Yakov, p. 606.

<sup>845</sup> Hooper, p. 191.

<sup>846</sup> Gil, Kingdom, IV, p. 949, index (50 references to trading lead); I, pp. 560, 563–564, 637. Goitein, Society, I, pp. 60, 109, 153–154, 268, IV, p. 184.

<sup>847</sup> Chevallier, p. 81.

<sup>848</sup> Low, IV, pp. 148–149. Cf. with the minority opinion of Tolkowsky, p. 58 who claims that the lemon was known in the Land of Israel during Mishna and Talmud times and was called ‘etrog kushi’, the Ethiopian citron (Bab. Talmud, Sukkah, 36a).

in the world mainly during the period of Islamic rule in areas under its control.<sup>849</sup>

**PU:** Lemon figures in 8 lists of *materia medica* (T-S Ar.35.82; T-S Ar.35.366; T-S AS 153.51; T-S Ar.35.327; T-S Ar.39.136; T-S AS 177.139; T-S AS 177.227 [3]; T-S Or.1081.J.71) and in 12 prescriptions: for fever (T-S AS 155.277), an invalid's diet (T-S Ar.42.189), plaster (*līmūn jāwī*; T-S NS 222.34), an ointment (T-S Ar.43.238), and unknown uses (lemon, T-S Ar.39.318; T-S NS 223.82–83 [3]; T-S NS 97.55; lemon water, T-S NS 223.82–83 [family prescription]; lemon potion, T-S Ar.34.239; T-S Ar.41.110; T-S Or.1081.1.66; syrup, T-S 12.33; lemon and quince potion, T-S NS 264.86).

**TU:** Lemon is mentioned as a simple in lexica of *materia medica* (T-S AS 87.77r), one of which records lemon and lemon juice and their medical activity (the material is based on Ibn al-Bayṭār, ed Bulaq, IV:118; T-S Ar.39.443) and in a prescription (potion and oxymel; T-S Ar.39.462). Lime is present in a recipe for the treatment of necrotic lesions together with arsenic and vitriol (T-S AS 172.16). Citron appears in an lexicon of *materia medica* (T-S AS 141.49A) and in a recipe for unknown uses written by the anonymous pharmacist referred to as al-Dimashqī (the Damascene; T-S Ar.39.65).<sup>850</sup>

**OMU:** Maimonides describes various medical uses of the lemon fruit. The juice is used as a mild purgative and a substance for preserving food.<sup>851</sup> The peel and the leaves serve as a medication against all poisons.<sup>852</sup> al-Qazwīnī notes that lemon fruit extract and the fruit itself resemble the citron, and that lemon juice is a 'wonderful' medicine against snake poison; he demonstrates this with a story.<sup>853</sup> Dāwud al-Anṭākī also describes various medical uses of the lemon: the fruit served to treat headaches, fainting spells, and stomach upsets, to cure scars, to make a preparation to counteract poisons, to stimulate the appetite, as well as to repress excessive appetite. The fruit's peel and seeds are used to make preparations against poisons, to treat stomach aches and gases, and to open obstructions. Lemon vinegar is applied to treat skin diseases.<sup>854</sup>

<sup>849</sup> Watson, pp. 45–48.

<sup>850</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>851</sup> For example: Maimonides, Aphorisms, 3:2; 4:14; Maimonides, Regiment, 2:9.

<sup>852</sup> Maimonides, Poisons, p. 135; Maimonides, Aphorisms, 22:45.

<sup>853</sup> al-Qazwini, p. 233.

<sup>854</sup> al-Anṭākī, pp. 285–286. Cf. Ibn al-Baytar, al-Jami, IV, pp. 118–122; Leclerc, no. 2055.

**TM:** In the past, sea travellers and pilgrims, mainly those from Europe, took lemons or lemon juice with them to prevent various diseases such as scurvy.<sup>855</sup> The effectiveness of the medical use of lemons in the past and present derives from the substances it contains: abundant vitamin C, and its peel and leaves contain oils with disinfectant properties.<sup>856</sup> The Bedouins in the Negev use lemon juice medically to treat colds, throat pains, exhaustion, stomach pains and diarrhoea.<sup>857</sup> Yemenite Jews took it to reduce fever, to treat colds, and infections of the throat, ears, and eyes.<sup>858</sup> The Jews of Iraq made extensive use of sweet and sour lemon for medical purposes such as to dissolve kidney stones and to treat skin diseases, nausea, gases, colds, gonorrhoea, and fever.<sup>859</sup> In Iraq the oil of the lemon was used as a stimulating drug and an expectorant, and was designated as a cure for intestinal diseases, while lemon juice served to prevent and treat scurvy, to treat infected throats, joint infections, dysentery, diarrhoea, and urination problems.<sup>860</sup>

**TAI:** Lemon, lemon juice, and lemon water were part of the diet of the Genizahs society; lemon was sold in the markets of Fustat.<sup>861</sup> al-Ghazzī described a type of lemon which grew in the environs of Damascus and was not found in Gaza and in Egypt.<sup>862</sup> From the testimony of medieval travellers it seems that lemon trees were cultivated in all parts of the Land of Israel.<sup>863</sup> Moshe Poriat of Prague, who visited the Land of Israel in 1650, tells of the 'large lemons for concoction' that were sold cheaply on the markets of Jerusalem. He later describes the way the fruit was squeezed for juice, which was preserved by a floating film of olive oil on it, as well as the use of the fruit juice to 'improve' the taste of water in Jerusalem.<sup>864</sup>

<sup>855</sup> Plants & Animals, XII, p. 126. In detail Grieve, pp. 474–476.

<sup>856</sup> Tal, p. 151.

<sup>857</sup> Abu-Rabia, pp. 17–18.

<sup>858</sup> Reiani, no. 29.

<sup>859</sup> Collected references in Ben-Yakov, p. 726.

<sup>860</sup> al-Rawi & Chaakravarty, p. 28; Hooper, pp. 101–102.

<sup>861</sup> Goitein, Society, I, p. 151; IV, pp. 230–231. Gil, Kingdom, II, pp. 662–663, no. 226; III, p. 293, no. 380; IV, p. 758, no. 526.

<sup>862</sup> Hamarneh, Plants, p. 256.

<sup>863</sup> On the history of the lemon in the Land of Israel: Goor, Fruits, pp. 171–172. Sources for the description of the lemon during in the Middle Ages in the al-Sham region are given by Amar, Production, p. 207.

<sup>864</sup> Ya'ari, Travels, pp. 279, 282.

## Lentisk

*Pistacia lentiscus* (Anacardiaceae), **A:** *maṣṭakā*<sup>865</sup>

**D&H:** The lentisk is a small tree or evergreen shrub (up to 2 m.). It is one of the commonest plants in the forests, maquis, and garigues of the Mediterranean phytogeographic zone. The green leaves are pinnate and the red fruits ripen in the summer. Most parts of the plant contain fragrant resin that drips when the plant is slashed.<sup>866</sup> Since early times a pungent gum was derived from lentisk resin, for which it received the Hebrew name ‘mastik’. The plant has been identified by Feliks with the ‘bekhaim’ (mulberry trees) mentioned in the story of King David and the Philistines (II Samuel, 5:23).<sup>867</sup> Dioscorides recommended the use of *schinos* (lentisk resin) to brighten the facial skin, cure wounds, treat dysentery, stop bleeding, tighten the gums, and prevent bad breath. The resin was also used in a remedy to treat snake bites, the fruit to treat scabies in humans and dogs, and the oil derived from the plant served as a purgative.<sup>868</sup> The Jewish Sages describe the use of lentisk resin, ‘muskity’, for medicinal applications and for bad breath (Tosephta Sabbath 138). Lentisk resin is still today produced, used, and traded in the Greek Islands.<sup>869</sup>

**PU:** Lentisk figures in 15 lists of *materia medica* (T-S Ar.30.274 [2]; T-S Ar.35.137 [2]; T-S Ar.35.366; T-S Ar.39.451; T-S AS 153.51; T-S AS 169.199; T-S AS 176.22 [2]; T-S AS 177.200; T-S AS 179.132; T-S AS 182.99; T-S AS 182.258; T-S AS 184.34; T-S NS 224.65; T-S NS 279.57; T-S NS 306.117) and in 16 prescriptions: for stomach problems (T-S NS 297.216), to strengthen the gums (T-S NS 90.65) and clean or treat the teeth (Ar.39.451); for unknown uses (T-S Ar.41.81; T-S Ar.42.110; T-S Ar.43.338 [2]; T-S AS 155.365; T-S AS 173.3 [2]; T-S AS 176.151; T-S AS 182.167; T-S NS 306.41; T-S Or.1081.J.39), as a compound (T-S AS 177.40), as a powder (T-S Ar.40.87 [2]), as pills (T-S AS 146.197), and in one named ‘ma’jūn Hibat Allāh’ (T-S Ar.34.305 [2]).

**TU:** Mastic is mentioned in medical books and lexica of *materia medica* (T-S Ar.39.199; T-S Ar.40.57; T-S Ar.40.87r; T-S NS 306.115; T-S AS

<sup>865</sup> Assaph, IV, p. 416; Maimonides, Glossaire, p. 70, no. 232.

<sup>866</sup> Plants & Animals, X, p. 212; see figure 33.

<sup>867</sup> Feliks, World, p. 102.

<sup>868</sup> Dioscorides, I.89.

<sup>869</sup> Howe, pp. 307–308.

167.17; T-S AS 167.18; T-S AS 169.199; T-S AS 170.136; T-S AS 182.99r; T-S AS 182.183; T-S AS 182.258r; T-S AS 182.303; T-S AS 179.273; T-S AS 179.308). It also appears as one simple out of several in recipes for the treatment of children with umbilical hernia and incessant crying (T-S Ar.40.160), against diarrhoea (T-S Ar.40.179r), in a diet for weight increase (T-S Ar.40.194), against quartan fever, to burn black bile and phlegm (T-S NS 306.74), and against obstruction, wind, diarrhoea, pleurisy, and trembling (T-S AS 179.110). Mastic is mentioned in a letter addressed to a higher authority offering special treatment (eye drops) of eye complaints (inflammation, dim vision, widening of the pupils; T-S NS 327.93).

Mastic is also mentioned in quasi-medical magical amulets against devils and *jinn* (T-S Ar.39.132). Resin of terebinth (*Pistacia palaestina* or similar species)<sup>870</sup> is one simple in a recipe for chewing gum (T-S Ar.42.20).<sup>871</sup>

**OMU:** Ibn al-Bayṭār writes about several medicinal applications of the plant and its parts: the leaves are used to induce urination, cure wounds, treat cancerous wounds, fix broken bones, stop womb secretions, and strengthen and brighten the teeth. Oil derived from the lentisk fruit induces constipation. The resin is used as an expectorant, an analgesic for toothache and stomach pains, to improve the taste of food and enhance the appetite, to brighten the skin, and strengthen the stomach.<sup>872</sup> According to Maimonides, lentisk resin is a component in a remedy to strengthen the heart<sup>873</sup> and in a syrup to improve the digestion.<sup>874</sup> The resin was also used as a component in a remedy for eye diseases, and water boiled with lentisk resin was used to strengthen the stomach and liver.<sup>875</sup> Dāwud al-Anṭākī mentions these uses and adds others, such as treating leprosy, eye diseases, dysentery, and constipation.<sup>876</sup>

**TAI:** Lentisk resin was sold and traded at Cairo, Qayrawān, Mahdiyya, Alexandria, Tripoli, and Palermo, and with Byzantine traders according to fragments dating to the 11th century, namely it was imported from the Greek Islands.<sup>877</sup> ‘Mastico’ was one of the substances sold in

<sup>870</sup> Issa, p. 141, no. 14.

<sup>871</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>872</sup> Ibn al-Baytar, al-Jami, IV, pp. 158–159; Leclerc, no. 2139. Cf. Ibn Sina, p. 360.

<sup>873</sup> Maimonides, Answers, 3:19; 4:15, 20.

<sup>874</sup> Maimonides, Regimen, p. 76.

<sup>875</sup> Maimonides, Aphorisms, 9:46; 13:44; 22:39.

<sup>876</sup> al-Antaki, pp. 299–300. Cf. al-Biruni, I, p. 306.

<sup>877</sup> Goitein, Society, I, pp. 151, 154, 268, 317, 337; Gil, Kingdom, I, p. 685, IV, p. 931 (10 references in index).

the markets of Acre in the 13th century.<sup>878</sup> A list of goods belonging to a deceased person in Jerusalem (1391 CE) includes several 'saris' branches which might have been used for basketwork, or subsequently for medical purposes.<sup>879</sup> 'Saris' is the Arabic term for lentisk.<sup>880</sup> The Arab village of Saris near Jerusalem was named for the lentisk shrubs growing in that area.<sup>881</sup> The traveller Rauwolf, who visited the Land of Israel in 1573, says he saw lentisk growing on the route from Jaffa to Ramlah and that resin gum was produced from it.<sup>882</sup>

## Liquorice

*Glycyrrhiza glabra* (Fabaceae), **A:** sūs, 'irq (root), 'ūd (wood), 'uṣūl (roots)<sup>883</sup>

**D&H:** A woody-stemmed perennial (2 m), with dark leaves and cream to mauve flowers. Its roots and stolons are yellowish internally (see figure 34).<sup>884</sup> The source of the scientific name of the genus is Greek, meaning sweet root. Assyrian medicine used the root to cure diseases of the skin, the stomach, jaundice, and cough. The leaves served for dressings and compresses to place over external wounds.<sup>885</sup> Babylonian medicine used it to cure stomach diseases, swellings, cough, problems of the urinary tract, and exhaustion.<sup>886</sup> Theophrastus recommends the use of the root to treat asthma, dry cough, and diseases of the chest. Pliny notes its use against bruises, kidney diseases, problems of the urinary tract, and chest diseases. Galen attributes to it the ability to reduce fever and to knit tissues together.<sup>887</sup> Dioscorides describes the use of *Glukoriza* juice to cure diseases of the liver, and to treat the chest, throat, scabies, and kidney complaints.<sup>888</sup> The Talmud mentions the word 'shoshi'—a plant

<sup>878</sup> Pegolotti, p. 64. On the trade in the plant and resin gum in the Middle Ages see Heyd, II, pp. 633–635.

<sup>879</sup> al-Asali, Wata'iq, II/1 p. 33.

<sup>880</sup> Dinsmore & Dalman, no. 405; Issa, p. 141, no. 12.

<sup>881</sup> Vilnai, p. 458.

<sup>882</sup> Rauwolf, p. 460.

<sup>883</sup> Maimonides, Glossaire, no. 271; Issa, p. 88, no. 6. Cf. Dinsmore & Dalman, no. 583.

<sup>884</sup> Chevallier, p. 99; White.

<sup>885</sup> Campbell, p. 11.

<sup>886</sup> al-Kindi, p. 288, no. 159.

<sup>887</sup> A comprehensive survey of the medical history of the plant is given in Venkata; Palevitch et al., pp. 156–157.

<sup>888</sup> Dioscorides, III.7.



that grows particularly along the rivers of Babylon (Bab. Talmud, Sukkah, 12b).

**PU:** Liquorice figures in 10 lists of *materia medica* (T-S Ar.30.274; T-S Ar.34.341; T-S Ar.35.227; T-S Ar.39.451; T-S AS 179.56; T-S AS 182.99; T-S AS 184.234; T-S NS 164.12; T-S NS 224.62; T-S NS 279.57) and in 22 prescriptions: for cleaning or treating the teeth (T-S Ar.39.451), cough (T-S K25.116; T-S K25.116; jam, T-S 8J15.20), as an aphrodisiac (T-S NS 164.159), to clean or treat the teeth (syrup; T-S Ar.39.451) and in an invalid's diet (T-S Ar.42.189). Blue liquorice was regarded as effective for treating skin diseases such as freckles, chronic ulcers and tinea of the scalp, and as an emmenagogue for helping to expel the foetus (T-S Ar.43.47). Several prescriptions are for unknown uses (T-S Ar.30.227 [2]; T-S Ar.30.305; T-S Ar.30.305; T-S Ar.34.239; T-S Ar.40.141; T-S Ar.41.110; T-S Ar.51.76; T-S AS 152.131; T-S AS 155.365; T-S AS 179.283; T-S NS 305.76(75); root, T-S 12.33); as powder (T-S Ar.40.87); and in a family recipe (T-S NS 223.82–83 [2]).

**TU:** Liquorice appears in medical books in recipes for the treatment of jaundice with acute fever and palpitation (T-S NS 305.116), inflammation, dim vision and widening of the pupils (eye drops and potions—found in a letter addressed to higher authorities; T-S NS 327.93), insufflation and venesection (T-S AS 176.501), and as a laxative (T-S Ar.40.130). It is also found as a simple in lexica of *materia medica* (T-S Ar.35.366r; T-S Ar.39.307; T-S AS 182.303; Or.1081.J.60) and in recipes for unknown uses (T-S Ar.39.355r; T-S NS 90.51v; T-S NS 305.76r; T-S Ar.40.60; T-S AS 180.171), one of which is a paste (T-S Ar.42.46). Liquorice pills were used to treat excess of yellow bile (T-S NS 224.178v) and liquorice rob for acute disease accompanied by fever (T-S AS 181.35r).<sup>889</sup>

**OMU:** The physician Assaf recommends the use of the liquorice to cure skin diseases, cough, diseases of the chest and liver, and also to slake thirst and to kill fleas.<sup>890</sup> According to al-Kindī, the roots of the liquorice are a component in a medication to cure illnesses such as cough and scabies. The leaves were used to treat haemorrhoids and mumps. The juice of the plant, 'rubb al-sūs', served to cure the teeth, cough, malaria, joint pains, thigh pains, and jaundice.<sup>891</sup> According to Maimonides, the

<sup>889</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>890</sup> Assaph, IV, 406–407.

<sup>891</sup> al-Kindī, nos. 8, 10, 39, 47, 54, 87, 102, 110, 111, 113, 138, 211, 218. Cf. Ibn Sina, p. 384.

plant is a component in an ointment to heal wounds and in a mild purgative; likewise in a potion that he defined as ‘a light and safe drug.’ It was considered a cold and moist drug.<sup>892</sup> Dāwud al-Anṭākī mentions additional medical uses: for fattening, to improve facial skin, to sharpen the eyesight, to remove white spots in the eye, for eye make-up, to cure headaches, chest diseases, and cough, as well as diseases of the lungs, liver, and spleen, to extract phlegm, to reduce fever, to accelerate menstruation, to cure haemorrhoids, and to cause vomiting.<sup>893</sup>

**TM:** The Arabs of Israel make medical use of various parts of the plant. The roots serve to dissolve kidney stones, to reduce fever, and to treat diseases of the respiratory tract, ulcers, and stomach aches. The seeds serve to treat open wounds, and the leaves to treat insomnia and peeling skin.<sup>894</sup> The Jews of Iraq used liquorice roots mainly to reduce fever, to cure various kinds of skin diseases, and to treat haemorrhoids, cough, problems of the respiratory tract, dizziness, stomach problems and hoarseness.<sup>895</sup> In Iran and Iraq the roots of the plant are used, among other things, as a mild purgative, to arouse sexual desire, and to treat digestive problems, mainly after eating too much fruit, and to treat cough.<sup>896</sup>

**TAI:** Liquorice is listed among the merchandise exported from Syria to Europe under the Venetian maritime laws (written in 1233).<sup>897</sup> It appears from Temple Mount documents that liquorice roots were sold by medicine sellers (‘aṭṭārīn’) in the markets of Jerusalem during the Mamluk period.<sup>898</sup> Moshe Poriat relates that the water in Jerusalem was good and healthy, but it was customary to sweeten it with liquorice.<sup>899</sup>

<sup>892</sup> Maimonides, Aphorisms, 15:56; 21:74; Maimonides, Regimen, 2:10; 3:4, 9.

<sup>893</sup> al-Antaki, p. 205. Cf.: Ibn al-Baytar, al-Jami, III, pp. 42–43; Leclerc, 1640; al-Biruni, I, pp. 195–196.

<sup>894</sup> Palevitch et al., p. 156; Crowfoot & Baldensperger, p. 190.

<sup>895</sup> Ben-Yakov. Summary of references on p. 737.

<sup>896</sup> Hooper, p. 122; al-Rawi & Chaakravarty, pp. 47–48. Additional uses in Eastern countries are given by Palevitch et al., pp. 157–158; Krispil, p. 1489.

<sup>897</sup> Venice Laws, p. 285.

<sup>898</sup> Lutfi, p. 293.

<sup>899</sup> Ya’ari, Travels, p. 282.

## Long pepper

*Piper longum* (Piperaceae),<sup>900</sup> **A:** **dār fulful, fulful ṭawīl, falfūlaniyya**<sup>901</sup>  
**D&H:** Small climbing tropical subshrub; male flowers are borne in a lax spike and female flowers in a dense spike. The red-brown fruits are used as spice and for medicinal uses.<sup>902</sup> Pepper is mentioned in the rabbinical writings, and this is the accepted identification by commentators for the Hebrew word 'tavlin' (condiment) (e.g., Mishna, Orla, 2:10). Maimonides identifies 'tavlin' with black pepper and white pepper. Theophrastus describes the plant, knows the different species, and among them mentions the long pepper and the black pepper. According to Dioscorides, *piperi*, identified with black pepper, is a medicine against poisons, a component in medications for the eyes, prevents pregnancy, cures cough and chest diseases, reduces pain, and improves the appetite.<sup>903</sup> The commercial value of various species of pepper in olden days generally and the Middle Ages particularly was very high. Many researchers claim that pepper was the condiment of primary importance and even served as a means of exchange instead of silver coinage.<sup>904</sup>

**PU:** Long pepper figures in 3 lists of *materia medica* (T-S Ar.35.366; T-S Ar.43.317; T-S AS 184.234) and in 5 prescriptions: for eye treatment (T-S AS 159.241) and for unknown uses (T-S Ar.30.291; T-S AS 173.3; T-S AS 173.3), one of which is a plaster (T-S NS 222.34).

**TU:** Long pepper appears in medical books in recipes for eye diseases such as squint and excessive lachrymation (collyria, kohl), palpitation; theriac; purgative, general tonics; for indigestion, haemorrhoids, stomach ailments, and colic (T-S Ar.42.199; T-S Ar.43.80; T-S Ar.43.320; T-S Ar.44.30; T-S Ar.44.187; T-S Ar.45.28; T-S NS 90.28). It also appeared in medical books (T-S Ar.11.31; T-S Ar.11.124; 43.98; T-S Ar.43.265; T-S Ar.44.149; T-S Ar.) dealing with ophthalmology (41.40; T-S Ar.42.21; T-S Ar.43.76; T-S Ar.43.166; T-S Ar.43.270; T-S Ar.44.79; T-S Ar.45.41; T-S AS 179.59; T-S NS 306.168), dermatology (T-S Ar.43.231), paediatrics (T-S Ar.45.20), fevers (T-S Ar.43.155), sex (T-S Ar.41.75; T-S Ar.44.79), and *materia medica* (T-S Ar.41.118; T-S Ar.44.204; T-S AS 184.234); in pharmacopoeias (T-S Ar.40.91; T-S Ar.44.205; T-S Ar.45.19;

<sup>900</sup> Issa; p. 141, no. 3.

<sup>901</sup> Identification and additional Arabic names are given by Maimonides, Glossaire, nos.194, 310; Issa, p. 141, nos. 2–4.

<sup>902</sup> Bown, p. 178; see figure 35.

<sup>903</sup> Dioscorides, II.159.

<sup>904</sup> Prawer, Colonial, p. 125.

T-S NS 90.61; T-S NS 305.58; T-S AS 179.59) and in other fragments (T-S Ar.38.9; T-S Ar.38.124).<sup>905</sup>

**OMU:** According to al-Kindī, long pepper is a component in medications for the eyes, for joint infections, and for stomach pains.<sup>906</sup> Maimonides states that long pepper is a component in a medication called ‘the great aṭrīfal’, which strengthens the limbs, delays aging, and aids coitus.<sup>907</sup> Pepper and long pepper are hot and dry drugs used extensively.<sup>908</sup> Ibn al-Bayṭār in his entry on pepper describes the plant and notes its resemblance to long pepper. He gives the medical history of the plant and mentions its uses in his own times. He also cites al-Ghāfiqī relating the use of the pepper to arouse desire and cure the gall bladder.<sup>909</sup>

**TM:** Long pepper continues to be used as a medicinal substance even in the 20th–21st century. It is mentioned among 40 species that constitute the medication.<sup>910</sup> Among Yemenite Jews, long pepper is used extensively to treat colds and fever, pains, coughs, nausea, and vomiting, and also to increase the appetite. The crushed fruit serves as a diuretic, strengthens the stomach, the voice, and virility, cures haemorrhoids, and prevents pregnancy.

**TAI:** In a Genizah document dated 1067, pepper is described as one of the kinds of merchandise traded in Ramlah and Sidon, and was even exported to Europe from the Land of Israel.<sup>911</sup> Pepper is listed among the products exported from Acre to Europe.<sup>912</sup> Black pepper and long pepper were also listed among the kinds of merchandise sanctioned by the Venetian maritime laws of 1233. They were exported from Syria and imported to Europe,<sup>913</sup> with Acre as the main port handling this export at least until the end of the 14th century.<sup>914</sup> Various sources report that even in the 15th century traders (mainly Venetians) continued to trade and buy different kinds of merchandise in Acre and Ramlah, including pepper.<sup>915</sup>

<sup>905</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>906</sup> al-Kindī, nos. 108, 111, 151, 178, 216, 217, 225.

<sup>907</sup> Maimonides, Regimen, 3:11; Maimonides, Aphorisms, 21:38; Maimonides, Sexual, 5; Maimonides, Poisons, p. 113.

<sup>908</sup> Maimonides, Aphorisms, 9:88; 21:85, 88.

<sup>909</sup> Ibn al-Baytar, al-Jami, III, pp. 166–167; Leclerc, no. 1696.

<sup>910</sup> Crowfoot & Baldensperger, p. 97.

<sup>911</sup> Gil, no. 580.

<sup>912</sup> Beugnot, II, p. 173.

<sup>913</sup> Venice Laws, p. 285.

<sup>914</sup> Ashtor, Trade, p. 283.

<sup>915</sup> *Ibid.*, p. 285, n. 30.

## Lotus

*Nymphaea sp.*; *Nuphar sp.* (Nymphaeaceae)<sup>916</sup>

### 1) Yellow Pond Lily

*Nuphar lutea [luteum]*, **A:** *nūfar*

**D&H:** This is a perennial plant that grows in still or running water, with a creeping root stem and large oval-shaped leaves which are immersed, floating or protruding from the water. Its yellow flowers bloom in spring and its fruit is a grape-like capsule.<sup>917</sup> According to Dioscorides the yellow pond lily described in his entry *Nymphaia alle* is a species of nymphaea and is used as an emmenagogue.<sup>918</sup>

### 2) White Water Lily

*Nymphaea alba*, **A:** *nīlūfar*, *naynūfar*

**D&H:** White water lily is a perennial water plant. Its root stem is buried in the mud, and the round leaf blades float on the water. The white flowers are large and resplendent, floating on the water or protruding from it. Two other similar species are known in this region: *Nymphaea nauchali* (Blue water lily) and *Nymphaea lotus*.<sup>919</sup> In his entry 'nymphaia' Dioscorides describes *Nymphaea alba* and notes its uses, such as to treat dysentery, intestinal diseases, illnesses of the spleen, and problems of the urinary bladder.<sup>920</sup>

**PU:** Different kinds of lotus figure in 7 lists of *materia medica* (yellow pond lily, T-S Ar.30.274; T-S Ar.35.82; T-S AS 177.9; T-S AS 179.56; T-S AS 184.34; T-S NS 164.12; T-S NS 279.57) and in a prescription for unknown uses (white water lily [oil/flowers], T-S Ar.51.76).

**TU:** Mentioned in medical books: (T-S Ar.39.91; T-S Ar.41.137; T-S Ar.42.167; T-S Ar.43.88; T-S Ar.44.130; T-S NS 164.194 [aphrodisiacs, combating wet dreams]) dealing with ophthalmology (T-S AS 180.6), dermatology (T-S Ar.43.114), sex (T-S Ar.44.79); in pharmacopoeias

<sup>916</sup> Issa, p. 125, no. 15, Maimonides, Glossaire, no. 252.

<sup>917</sup> A description is given in *Plants & Animals*, X, pp. 86–87; Zohary, p. 314; Feinbrun-Dothan, p. 203.

<sup>918</sup> Dioscorides, III.148.

<sup>919</sup> A description is given by Feinbrun-Dothan, p. 203; *Plants & Animals*, X, p. 86.

<sup>920</sup> Dioscorides, III.148.

(T-S Ar. 39.478; [eye lotion]T-S Ar.43.193; T-S Ar.45.33; T-S NS 222.22; T-S NS 222.28) and in a lexicon of *materia medica* (T-S AS 160.197).<sup>921</sup>

**OMU:** According to Maimonides, the 'nīlūfar' is one of the plants that strengthens the appetite and the spirit, and is a medicinal substance for skin diseases. The flower is used as a purgative drug and a component in a preparation to sweeten the breath. The leaves serve as a component in an anaphrodisiac preparation to 'suppress sexual desire'.<sup>922</sup> al-Qazwīnī reports that the 'nīlūfar' is a water plant that grew in the region and is used as a soporific, to relieve headache, and to treat leprosy and baldness. Its use also inhibits sexual desire.<sup>923</sup> From an 18th-century document in the Jerusalem court archives it seems that 'nūfar' water was used to cure pregnant women in the city.<sup>924</sup>

**TM:** The yellow pond lily contains tannin and gallic acid, and was once used to cure skin diseases.<sup>925</sup> A powder derived from the root stem of *Nymphaea lotus* serves as a medication for digestive or intestinal problems, and the powder of the crushed seeds is used in the Sudan to treat skin diseases.<sup>926</sup> In Iraq and Iran *Nymphaea alba* is called 'kol nilofar'. Flowers of various types of the white water lily are sold in India where they are used as a medicinal drug, mainly as an astringent, to stop haemorrhages, and as a component in a preparation to reduce fever and cure lung diseases in children.<sup>927</sup>

**TAI:** White water lily syrup was traded between Tripoli (Libya) and Fustat.<sup>928</sup> In a description of the Safed region during the 14th century, al-'Uthmānī notes that in Kadesh lake (Lake Hulah) 'nīlūfar' plants grew.<sup>929</sup> al-Ghazzī describes the 'nīlūfar' with all its varieties (red, white, and blue) and also emphasizes the yellow Damascus variety. The seeds of different varieties were used for medicinal purposes.<sup>930</sup>

<sup>921</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>922</sup> Maimonides, Regimen, 2:20; Maimonides, Aphorisms, 9:106; 13:51; 21:74; Maimonides, Sexual, 5:5; 7:1.

<sup>923</sup> al-Qazwini, p. 261.

<sup>924</sup> Cohen, 18 century, p. 325, no. 279.

<sup>925</sup> Plants & Animals, X, p. 86.

<sup>926</sup> Uphof, p. 363.

<sup>927</sup> Hooper, pp. 144–1145. For the medicinal uses of the nuphar and nymphaea varieties in Europe see Grieve, p. 484.

<sup>928</sup> Gil, Kingdom, IV, p. 221, no. 668.

<sup>929</sup> Lewis, p. 480.

<sup>930</sup> Hamarneh, Plants, p. 256.

## Mandrake

*Mandragora autumnalis* (Solanaceae),<sup>931</sup> **A:** luffāh, lu‘āb (root), luffāh, yabrūh, maghd<sup>932</sup>

**D&H:** Perennial (up to 5 cm), with deep branching root, a rosette of broad floppy leaves, white-purple flowers, and round yellow fruit.<sup>933</sup> Among the ancient Babylonians, for example, the plant served as a toothpaste and also to cure problems in the urinary tract, pains in the limbs, and problems of the anus, stomach, and eyes.<sup>934</sup> The scientific name of the plant was given to it by Hippocrates as an intimation of its toxicity. Dioscorides mentions *Mandragoras* and lists its medical uses: to treat eye diseases, to stimulate menstruation, to abort the fetus, and to treat poisonings, growths, and ulcers.<sup>935</sup> According to our sources, mandrake fruit has special powers in connection with love and fertility (Genesis 30:14).<sup>936</sup>

**Identification:** The Arabic term ‘lu‘āb’ could be translated also as saliva, which was used as medicinal material as well. However, since most of the historical sources in which ‘lu‘āb’ is mentioned are lists of *materia medica* it is clear that saliva was not a commodity; therefore, we identified it as the roots of mandrake.

**PU:** Mandrake figures in 8 lists of *materia medica* (T-S Ar.34.341; T-S Ar.35.366, T-S Ar.39.487; T-S Ar.43.317; T-S AS 179.132; T-S AS 182.258; T-S NS 164.12) and in one prescription for unknown uses (T-S Ar.39.184).

**TU:** Mandrake is mentioned in medical books (T-S Ar.40.1; T-S Ar.40.5; T-S Ar.40.60; T-S Ar.40.68; T-S Ar.40.104; T-S Ar.40.121; T-S Ar.41.55), in those on poison (T-S Ar.44.77) and of *materia medica* (T-S Ar.44.204; T-S Or.1080.2.74), and in other fragments (T-S Ar.38.76; T-S Ar.39.472).<sup>937</sup>

**OMU:** The physician Assaf relates that the crushed roots of mandrake cure leprosy and skin diseases, and are beneficial for the stomach. The crushed fruits ‘remove whites from the eyes’ and serve as a component

<sup>931</sup> Issa, p. 114, nos. 12–13.

<sup>932</sup> Maimonides, Glossaire, nos. 179, 216; Issa, p. 114, no. 13; Dinsmore & Dalman, no. 1244.

<sup>933</sup> Chevallier, p. 230.

<sup>934</sup> al-Kindi, p. 330.

<sup>935</sup> Dioscorides, IV.76.

<sup>936</sup> Josephus, JW, VII, 6:3.

<sup>937</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

in a medication against snakebite and scorpion sting.<sup>938</sup> al-Kindī reports that autumn mandrake serves as a component in a medication to cure insanity and epilepsy.<sup>939</sup> Maimonides states that the plant is a component in a medication to replace the hymen, and the root is a component in a sleeping pill. It is listed among the cold and dry drugs.<sup>940</sup> Elsewhere he describes many uses of autumn mandrake and its roots for medications against snakebites and scorpion stings. According to him the poison of the plant is contained mainly in the rind of the fruit and in the seeds, and it serves as one of the ingredients in the great theriac.<sup>941</sup> According to al-Qazwīnī, smelling the plant for a long time causes heart failure, while massage with its leaves cures leprosy. He also relates that when it is boiled it is effective against headache, and that it slows the senses and puts one to sleep. Its additional uses are: as a dressing for swellings including mumps, for putrescent wounds, and for joint pains. He cites Ibn Sīnā, telling that it was used as an anaesthetic before limb amputation.<sup>942</sup>

**TM:** The Arabs of Israel are aware of the plant's toxicity and do not use it for curative purposes, but they used it to drug brooding hens so that they do not break their eggs.<sup>943</sup> The Bedouins in the Negev use it to stimulate menstruation and to increase fertility.<sup>944</sup> The Druze in the Golan spread the juice of the fruit over their bodies to reduce fever and to relieve pains. The Jews of Morocco used it to increase fertility and to fatten women.<sup>945</sup> For the Jews of Iraq the plant served as a component in medications for the eyes and against infertility.<sup>946</sup> In Europe it was used to reduce fever, and to sooth and cure problems of the stomach, asthma, cough, and high fever.<sup>947</sup>

**TAI:** Mentioned in a Genizah merchant's letter as a medicinal plant bought in Cairo.<sup>948</sup> The Andalusian Abū al-Khayr al-Ishbīlī states that it was an agricultural crop in Egypt and the al-Shām region.<sup>949</sup> al-Bīrūnī

<sup>938</sup> Assaph, IV, 414.

<sup>939</sup> al-Kindī, nos. 189, 205.

<sup>940</sup> Maimonides, Sexual, 17:2; 18:3; Maimonides, Aphorisms, 21:83.

<sup>941</sup> Maimonides, Poisons, pp. 104, 109, 149.

<sup>942</sup> al-Qazwīnī, pp. 260–261. Cf. Ibn Sīnā, p. 350.

<sup>943</sup> Plants & Animals, XI, p. 92.

<sup>944</sup> Abu-Rabia, p. 16.

<sup>945</sup> Krispil, p. 121.

<sup>946</sup> Ben-Yakov, pp. 165, 262.

<sup>947</sup> Uphof, p. 329; Grieve, pp. 510–512.

<sup>948</sup> Gil, Kingdom, II, p. 676, no. 231; Dietrich, Egypt.

<sup>949</sup> al-Ishbīlī, p. 20.



asserts that the plant was very widespread in Greater Syria where the seeds were used as food for human and beast.<sup>950</sup> Ibn al-Bayṭār notes that this referred to the fruit of the mandrake, and that this was its additional name in the al-Shām region and in Egypt.<sup>951</sup>

### Marsh-mallow

*Althea officinalis* (Malvaceae), **A:** **khatmī**<sup>952</sup> (Wood mallow) *Malva sylvestris*<sup>953</sup>

**D&H:** Tall, hairy, perennial weed. Its leaves are lobed and the flowers are large, white, and have five petals. The plant grows in temperate zones of the globe.

**PU:** Marsh-mallow figures in 3 lists of *materia medica* (T-S AS 184.234; T-S NS 224.62; T-S NS 279.57) and in 13 prescriptions: treatment for eye and face (T-S Ar.35.363), an aphrodisiac (wood—T-S NS 164.159), against swelling (T-S NS 194.70), a diet (T-S Ar.41.71; T-S Ar.39.451), and for unknown uses (T-S Ar.51.76; T-S AS 179.283; T-S NS 327.97; T-S Or.1081.1.66; wood, T-S Ar.40.141; T-S NS 297.260; T-S 12.33; seeds, T-S NS 305.76(75)).

**TU:** Marsh-mallow is mentioned in medical books in recipes for the treatment of sciatica, varicose veins, and venesection (T-S NS 306.172), weakness of the liver and bile corruption (T-S AS 172.7), apparent swelling behind the ear and abdominal diseases (T-S AS 176.493). It also appears as a simple in a recipe for preparing lozenges (T-S Ar.11.13r).<sup>954</sup> and in other recipes (for unknown uses, quoting Galen]; T-S Ar.41.13), skin lotions and poultices to heal pustules and remove scabs (quoting Galen; T-S Ar.42.22), althea stems (unknown uses; T-S Ar.40.141r).<sup>955</sup>

**OMU:** Ibn Sīnā recommends the use of marsh-mallow for the treatment of skin diseases, abscess, swellings, pains of the joints, spasms, lung diseases, “hot” coughs, burns in the urinal tracts and the intestine, stones in the kidney. It also eases spitting blood, thirst and beestings.<sup>956</sup>

<sup>950</sup> al-Biruni, II, pp. 54, 60–61.

<sup>951</sup> Ibn al-Baytar, al-Jami, IV, p. 110; Leclerc, no. 2034.

<sup>952</sup> Issa p. 11, no. 6.

<sup>953</sup> Issa p. 114, no. 10.

<sup>954</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>955</sup> Isaacs & Baker, nos. 317, 354, 417.

<sup>956</sup> Ibn Sina, I, p. 285.

## Mollusc

Operculum of marine gastropods; (see figure 36), **A:** *azfār ṭīb*

**D&H:** The substance is the fingerlike operculum (cover) of marine gastropods (snails) of the Indian Ocean and Red Sea, mainly *Strombus lentiginosus* (Strombidae) and *Murex anguliferus* (Muricidae). The operculum contains aromatic substances and therefore smells when placed on smouldering charcoal as incense and for medical purposes. Different kinds, varied in size and shape, were used for medicine in the past; some may be found in markets to the present day. Classical medical sources describe different medical uses of snails: for treating the stomach, skin diseases, teeth problems, eye diseases, tumours, and rheumatism.

**PU:** Mollusca figures in 6 lists of *materia medica* (T-S AS 184.234; T-S Ar.30.274; T-S Ar.35.328; T-S AS 179.132; T-S NS 164.12; T-S AS 184.234).

**TU:** It is mentioned in medical books such as Ibn Sīnā (T-S NS 327.55) and another dealing with *materia medica* (T-S Or.1081.1.21).<sup>957</sup>

**OMU:** Snail shell was used for the treatment of skin diseases, wounds in the stomach, arthritis, and eye and ear diseases. It was also used to regulate the menstrual cycle and as a purgative and an emetic. The operculum served as substance for the treatment of uterus diseases, epilepsy, and paralysis.<sup>958</sup>

## Musk

*Moschus moschiferus* (Cervidae), **A:** *misk*<sup>959</sup>

**D&H:** Musk is a substance used as a perfume and medicine. Its source is the anal glands of the musk deer, which inhabits the mountains of Central Asia (the Himalayas and Tibet). The gland is found in the male of the species and is situated between the anus and the penis. It weighs 30–50 grams and is filled with liquid during the mating season. The substance in its raw state is dark brown, but some time after extraction it turns black. It is marketed liquid or solid.<sup>960</sup> Musk was used in ancient eastern cultures, and it is mentioned in several Talmudic tractates in connection

<sup>957</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>958</sup> Lev & Amar 2002, p. 262.

<sup>959</sup> Maimonides, Glossaire, no. 290.

<sup>960</sup> Chizik, pp. 29–30; Shapira, Musk, p. 95.

with a blessing to be pronounced on using it. In Christian sources the name first appears in Hieronymus (4th cent. CE) and in the Talmud (B. Berachot 43a). It is also mentioned in the Qurʾān, and is cited by many Jewish and European physicians.<sup>961</sup> In the Middle Ages musk was used as an important spice and was imported overland from Asia.<sup>962</sup>

**PU:** Musk figures in 4 lists of *materia medica* (T-S AS 184.234; T-S NS 306.117; T-S AS 152.131; T-S AS 182.258) and in 2 prescriptions: to strengthen the gums (T-S NS 90.65) and for unknown uses (T-S Ar.43.338 [3]).

**TU:** Musk appears in medical books as one of the simples which were useful for headaches and diseases of the brain (taken orally or applied to the forehead; T-S Ar.40.157), paresis and weakness of sexual organ, and as an aphrodisiac (T-S AS 179.226), against flatulence, warts, dysuria, dysmenorrhoea, hard swellings, and as abortifacient if the foetus is dead (T-S AS 144.154), for aphasia, muscle spasms, tension, shaking, and facial palsy (T-S AS 144.306). It also appears in a lexicon of *materia medica* (T-S Ar.41.29).<sup>963</sup>

**OMU:** al-Tamīmī describes the preparation of ‘nadd’ (perfume made of musk and ambergris) which the mother of the Abassid Caliph al-Muqtadir (908–932 CE) made and offered every Friday as incense at the Dome of the Rock in Jerusalem (Bayt al-Maqdis). He adds: ‘The head of the Temple servants used to give my father some of this ‘nadd’ and my father would melt it in ‘bān’ (oil of the fruit of the ben tree) and produce ‘ghāliya’ (perfume mixture) from it, which is unequalled for its good scent.’<sup>964</sup> Such a mixture features in a letter describing the import of perfumes from North Africa to Alexandria (T-S Ar.30.2). al-Tamīmī also offers a detailed formula for preparing a perfume or scent called ‘ma’jūn al-misk.’<sup>965</sup> A glass jar of perfume and musk is mentioned in a Karaite *ketubbah* (marriage contract) in Jerusalem dated 1028 CE.<sup>966</sup> al-Kindī reports the use of ‘fār’ as an ointment against baldness and for pus-infected wounds.<sup>967</sup> Isaacs refer to a fragment identified as a recipe

<sup>961</sup> For a complete historical survey see *Ibid.*, pp. 95–101.

<sup>962</sup> Praver, Jerusalem, p. 402.

<sup>963</sup> Isaacs & Baker, personal observations and Isaacs’s unpublished notes.

<sup>964</sup> Amar & Seri, p. 51; al-Nuwayri, 12, p. 64.

<sup>965</sup> *Ibid.*, p. 90.

<sup>966</sup> Gil, p. 557, no. 305.

<sup>967</sup> al-Kindi, nos. 16, 56, 93, 147.

extracted from al-Kindī's book that contains musk (T-S Ar.41.29).<sup>968</sup> Maimonides cites al-Tamīmī stating that 'misk' was a component in a medication against headache and eye ache and as a medicine for treating diarrhoea. Musk was also a component in a medication in the so-called 'great 'itrīful' to strengthen the limbs and heart, to prolong old age, and to enhance the senses and sexual potency. Tibetan musk was used as a component in 'a vendor's powder to cause instant sleep'.<sup>969</sup>

Ibn al-Bayṭār in his entry 'misk' describes the animal, its habitat, methods of hunting it, and the means for producing the medicinal substance. Musk is described as a hot and dry drug to counter the odour of sweat and bad breath, to strengthen the heart and brain, to warm internal organs, to promote the sexual appetite, and to strengthen the male sexual organs. Musk also alleviates headache, cleanses the eyes and is used as a medication against diarrhoea, as well as being a component in aperients and against haemorrhoids and flatulence.<sup>970</sup>

**TM:** 'Fār' is a type of musk used in India as a drug for arousal and as a stimulant, and also as a medicine against spasms. Tamil doctors used the substance as an anti-spasmodic in children and also to counteract dysentery and typhoid fever. Today very little use is made of it.<sup>971</sup> It is still applied in TM in Pakistan and can be obtained from medicine vendors at the markets.<sup>972</sup> An experiment conducted in the 1960s proved that musk oil is disinfectant.<sup>973</sup>

**TAI:** Musk is mentioned in many Genizah fragments as a commodity in many Mediterranean cities (including Alexandria and Qayrawān), with especial reference to its price.<sup>974</sup> It was exported from China by merchants.<sup>975</sup> Musk (*mousquelliat*) was traded in Acre in Crusader times.<sup>976</sup>

<sup>968</sup> Isaacs & Baker., 358.

<sup>969</sup> Maimonides, Aphorisms, 3:11; 4:11; 9:30; 14:49; 21:75; Maimonides, Sexual, 18:3.

<sup>970</sup> Ibn al-Baytar, al-Jami, IV, p. 155; Leclerc, no. 2127. Cf. al-Antaki, pp. 297–298. See also: Levey, Ibn Masawayh, pp. 398–399.

<sup>971</sup> al-Kindi, p. 310, no. 217.

<sup>972</sup> Vohora & Khan, p. 38.

<sup>973</sup> Mishra et al.

<sup>974</sup> Gil, Kingdom, I, pp. 689, IV, p. 930 (20 references to trade in musk); Goitein, Society, I, pp. 153–155, 219, 373, IV, p. 316.

<sup>975</sup> Gil, Kingdom, I, pp. 616, 623.

<sup>976</sup> Assises, II, p. 174.

## Myrobalan

Cherry Plum, *Terminalia* sp. (Combretaceae), **A:** 'amlaj; **balilaj, halilaj** ('ihlilaj)<sup>977</sup>

**D&H:** The *Terminalia* genus has 200 species. The trees are tall and their fruit contains 30% tannin which is used for remedial and industrial purposes. Indian myrobalan (*Terminalia arjuana*) is a tall tree with leaves that cluster close to the ends of the branches; its globular fruit is a large, tasty drupe containing 50% oil, which is used for food (see figure 37). Most of the varieties listed below<sup>978</sup> grow in India and Madagascar.<sup>979</sup> The use of the myrobalan fruit as a remedy has been well known in India and China since early times. Greek and Roman medical treatises allude neither to the tree nor to its fruit.<sup>980</sup> In the Middle East the plant is mentioned from the early Islamic period in connection with the medicinal use of its fruit. In the West there is no information about this plant until the Middle Ages, when trade in its fruit began. The main species of myrobalan are presented below in table 12.

Table 12 Myrobalan species used for medicine

Scientific name	Arabic name	English name	Abbreviation
<i>Terminalia arjuana</i>	<b>halilaj hindī</b>	Indian myrobalan	I.M.
<i>Terminalia citrina</i>	<b>halilaj ('ihlilaj) 'aşfar</b>	Yellow myrobalan	Y.M.
<i>Terminalia chebula</i>	<b>halilaj ('ihlilaj) kābulī ('aswad)</b>	Black (Chebulic) myrobalan	C.M.
<i>Terminalia bellerica</i>	<b>balilaj</b>	Belleric myrobalan	B.M.
<i>Terminalia emblica</i>	<b>'amlaj</b>	Emblic myrobalan	E.M.

**PU:** Different kinds of myrobalan figure in 24 lists of *materia medica* (I.M., T-S Ar.30.274; T-S Ar.43.317; T-S AS 152.131; T-S AS 181.109; B.M., T-S Ar.35.328; T-S Ar.39.450; T-S Ar.39.451 [3]; T-S Ar.39.487; E.M., T-S Ar.30.274; T-S Ar.39.450; T-S AS 182.73; T-S AS 184.234; C.M., T-S Ar.30.291; T-S Ar.39.307; T-S Ar.39.451; T-S Ar.43.317; T-S Ar.51.53; T-S AS 179.80; T-S AS 181.109; Y.M., T-S Ar.39.451 [4]; T-S Ar.39.487; T-S Ar.43.315; T-S Ar.43.317; T-S AS 184.34). It appears in 55

<sup>977</sup> Issa, p. 178, nos. 14–16; p. 179, no. 12.

<sup>978</sup> According to Kroner, p. 651; Issa, pp. 178–179; Maimonides, Glossaire, p. 41, no. 112; p. 103, no. 374; Maimonides, Haemorrhoids, 4:1, 19.

<sup>979</sup> Zohary, p. 459; Hill, pp. 123–124.

<sup>980</sup> According to Levey, see al-Kindi, p. 342.

prescriptions: for eye diseases (C.M, B.M., T-S AS 159.241), hallucination (E.M., T-S 16.291, stomach and digestion (E.M., C.M. [2], I.M., T-S AS 180.15), weak eyesight and migraine (Maimonides; T-S Ar.30.286), diet (B.M., C.M., T-S Ar.41.71), invalid diet (Y.M., C.M., T-S Ar.42.189), as an aphrodisiac (Y.M., I.M., C.M., T-S NS 164.159), lincti and ointment (C.M., T-S AS 147.192). It also mentioned in prescriptions for unknown uses (Y.M., T-S Ar.40.141; B.M., T-S Ar.39.184 [peel]; T-S Ar.30.291; T-S Ar.30.65; T-S Ar.41.81 [2]; T-S AS 173.3; T-S NS 305.76(75); T-S NS 306.41; T-S 13J6.14; E.M., T-S Ar.30.291; T-S Ar.30.65; T-S Ar.41.81; T-S Ar.43.338; T-S AS 173.3; T-S 13J6.14; C.M., T-S K25.212; T-S Ar.30.291; T-S Ar.40.141; T-S Ar.41.81; T-S Ar.43.338; T-S Or.1081.J.39; T-S AS 155.365; T-S AS 173.3; T-S AS 177.31 [2]; T-S NS 83.28; T-S NS 327.40; T-S NS 327.97; T-S 12.33; T-S NS J38; T-S 13J6.14; I.M., T-S Ar.40.141; T-S AS 177.31; T-S NS J38; T-S 12.33; T-S 13J6.14; T-S Ar.40.141; Y.M., T-S Ar.41.81 [2]), compound (E.M., T-S AS 177.40), and so-called small 'iṭrifil (I.M., C.M., Y.M., E.M., T-S Ar.42.67).

**TU:** Different kinds of myrobalan are mentioned in medical books as ingredients in recipes for unknown uses and in lexica of *materia medica*: C.M. (T-S Ar.39.184; T-S AS 157.209; T-S Ar.41.13; T-S AS 129.241r; T-S Ar.39.307), Y.M. (T-S Ar.41.130; T-S AS 181.232) I.M. (T-S AS 181.109r). Myrobalan was used for the treatment of cough and cold (according to Galen and Ibn Māsawayh; T-S Ar. 11.11), pains in the joints (T-S Ar.39.157), dry, brittle, and splitting hair (T-S Ar.40.66), to stop salivation (T-S NS 164.62v), 'cold' headache (T-S NS 164.75r), inflammation, dimness of vision and dilation of the pupils (T-S NS 327.93). C.M. features in a recipe for the treatment of excessive lachrymation due to crying, laughing, exposure to heat or cold winds (T-S Ar.42.5), diarrhoea (T-S Ar.42.37r); Indian myrobalan served for the treatment of diarrhoea and to strengthen the muscles of the stomach (T-S At.40.180). C.M. was part of a recipe for stomach and other digestive ailments (T-S AS 180.15r).<sup>981</sup>

**OMU:** al-Kindi reports the use of black 'halilaj' which is a cathartic drug intended also to cure ear diseases and throat pains, while yellow 'halilaj' is used to counteract swellings in the mouth and also as a component in an abortive medication.<sup>982</sup> Maimonides mentions several uses for

<sup>981</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>982</sup> al-Kindi, nos. 68, 71–71, 75, 211. Cf. Ibn Sina, pp. 271–271; al-Biruni, I, p. 76; II, pp. 80, 104.

different varieties of myrobalan such as a decoction of ‘myrobalanash’ which is defined as a medication that can also be taken by healthy persons. Elsewhere he indicates that ‘halilaj kâbuli’, ‘hindi’, and ‘balilaj’ are all components of the ‘great aṭṛifal’. These varieties were also components in a cathartic syrup.<sup>983</sup> ‘Balilaj’ and ‘amlaj’ served as components in a decoction to strengthen breathing, to ‘revive the spirit, stimulate coitus, harden the penis and increase sperm’. All the species of myrobalan are cold and dry drugs.<sup>984</sup> Ibn al-Bayṭār describes the different varieties of the ‘halilaj’ and cites many physicians in references to it. Most of the information deals with the various uses of the ‘amlaj’ fruit for causing or preventing diarrhoea by means of the varieties which have pungent and astrigent qualities. These qualities also aid in treating haemorrhoids. Ibn al-Bayṭār quotes al-Ghāfiqī praising this medication for preventing diarrhoea, and for strengthening the gums, teeth, and brain; he calls it ‘one of the most important and useful medications.’<sup>985</sup>

**TAI:** In a Genizah letter dated 1053 CE, Abraham ben Shmuel of Ramlah requests Shlomo ben Yehuda of Jerusalem to send him a little ‘halilaj’ together with ‘kuḥl’ ‘to remove the white spot from the eye of my little daughter.’<sup>986</sup> In another letter dated 1040 CE, Moshe ben Ya‘aqov of Jerusalem, writing on behalf of his sister, requests Nahray ben Nissim of Fustat to buy some ‘kâbuli’—probably referring to ‘halilaj kâbuli’—and to bring it to Jerusalem.<sup>987</sup> In a letter dated 1060 CE from Ya‘aqov ben Yosef of Ashkelon to Nahray ben Nissim of Fustat the writer requests that a consignment of yellow ‘amlaj’ be sent to him. Another letter of that same year describes the sale of ‘amlaj’ in Tyre on behalf of a trader in Fustat.<sup>988</sup> From an interesting remark we may learn that myrobalan was used as part of the monthly wage. The different kinds of myrobalan were traded by Jews in Mediterranean ports and cities in the 11th century: it was shipped from Alexandria to Sicily, and traded in Cairo, Alexandria, Mahdiyya, and Qayrawān.<sup>989</sup> ‘Amlaj’ (*Helileth*) is mentioned in a list of substances that the Crusaders in Acre traded in during the 13th

<sup>983</sup> Maimonides, Regimen, 2:9; 3:9, 11.

<sup>984</sup> Maimonides, Sexual, 1:5. Cf. al-Ghāfiqī, no. 124; Maimonides, Aphorisms, 21:73.

<sup>985</sup> Ibn al-Baytar, al-Jami, IV, p. 190; Leclerc, no. 2261. For similar uses see also al-Antaki, p. 62.

<sup>986</sup> Gil, II, p. 421, no. 230.

<sup>987</sup> Ibid., II, p. 106, no. 460.

<sup>988</sup> Ibid., III, p. 187, no. 487; p. 210, no. 494; p. 215, no. 496.

<sup>989</sup> Gil, Kingdom, I, p. 565, II, p. 887, no. 294, III, p. 252, no. 373, p. 903, no. 574, p. 912, no. 575. Goitein, Society, I, p. 337, II, pp. 267–268, IV, p. 464.

century.<sup>990</sup> The Swedish scientist Frederick Hasselquist (1722–1752) testifies that when he visited Egypt ‘myrobalan’ was used there. From the information he has gathered he is able to describe each of the different terms—‘caboli’, ‘asfar’, ‘balili’, ‘ambalili’, ‘hindi’, and ‘cabjiri’, their various qualities, and the ripening stage when the fruit is picked. Hasselquist assumes that the references are to a specific tree that grows in India and Malabar, and that its fruit is brought by caravan to Egypt. The main use of the fruit is as a laxative.<sup>991</sup>

## Myrrh

*Commiphora myrrha* (Burseraceae), **A: murr**<sup>992</sup>

**D&H:** This species has 50 varieties that grow in the deserts of Africa and Arabia. Myrrh is a small, deciduous tree or thorny shrub exuding an aromatic resin that emerges from ducts found in the stem and branches. The crystallized resin is reddish-yellow, and is produced by slashing the stem and gathering the resin after it dries.<sup>993</sup> Myrrh resin is one of the most ancient medicinal substances and its constituents have been tested up to the present day.<sup>994</sup> It is mentioned in the Ebers papyrus as a component in various medications and an ingredient in incense in other cultures.<sup>995</sup> The Bible mentions it twelve times in connection with its use as a perfume and incense (e.g., Song of Songs 4:14), and in the Talmud the Jewish Sages also note its uses. Dioscorides in his entry ‘*Myrrha*’ describes the production of the resin and states that the pure variety causes heat, induces sleep, dries and constricts, and serves as an external and internal medication and as incense.<sup>996</sup> In the Mishna, myrrh ointment is mentioned as softening and depilating the skin. Myrrh is listed among the valuable merchandise traded in the East, the Arabian peninsula particularly, throughout history.<sup>997</sup>

**PV:** Myrrh figures in 6 lists of *materia medica* (T-S Ar.30.274 [2]; T-S Ar.35.327 [2]; T-S Ar.35.366; T-S AS 176.22; T-S NS 305.69; Indian kind,

<sup>990</sup> Assises, p. 176.

<sup>991</sup> Hasselquist, p. 300.

<sup>992</sup> Issa, p. 55, nos. 1, 6; Maimonides, Poisons, p. 112, no. 151.

<sup>993</sup> Zohary, p. 482; Hill, p. 173; see figure 38.

<sup>994</sup> Houh et al.

<sup>995</sup> Amarna, no. 269.

<sup>996</sup> Dioscorides, I.77; see Michie & Cooper for few more uses in TM.

<sup>997</sup> In detail: Groom.



T-S Ar.35.344) and in 6 prescriptions: for eye diseases (T-S Ar.44.162; T-S AS 161.23), cough (T-S 8J15.20v), and unknown uses (T-S Ar.30.16; T-S AS 176.494; T-S NS 297.17). Myrrh is found in the will of Kalaf ben Yeshu'a (d. 1043), the representative of the lepers in Tiberias. It may have been a component in a medication to treat leprosy.<sup>998</sup>

**TU:** Myrrh is mentioned in medical books in recipes for the treatment of: stomach and liver complaints (with saffron and cumin; T-S Ar.10.5), coughs and colds (attributed to Galen, and oxymel to Ibn Māsawayh; T-S Ar.11.11), in a lexicon of *materia medica* (T-S Ar.35.252), and in a recipe for unknown uses (T-S NS 151.52r). Damascene myrrh features in another such recipe (T-S AS 162.186,5). Indian myrrh is found in a recipe of the anonymous pharmacist known as al-Dimashqī (the Damascene; T-S Ar.39.65). Socotran myrrh is found in a quasi-medical prescription (T-S NS 90.16).<sup>999</sup>

**OMU:** According to al-Kindī, myrrh is a component in many medications (28) to treat stomach ulcers, pus-infected sores, toothache, contaminated wounds, eye diseases and haemorrhages.<sup>1000</sup> Ibn Waḥshiyya describes the production process of myrrh resin and notes its uses: a hot drug for remedial purposes, for cultic rituals, and as incense.<sup>1001</sup> According to Maimonides, myrrh was the main component in the 'great theriac' and in a medication against snakebite, as described by Galen. It was also an ingredient in a theriac intended for bites by stray dogs.<sup>1002</sup> Elsewhere Maimonides warns against the use of myrrh in a cathartic medication or drinking it with wine.<sup>1003</sup> Ibn al-Bayṭār cites many physicians in connection with the medicinal uses of myrrh, including congealing of wounds, treating intestinal worms, curing chronic cough and stomach ulcers, draining pus, preventing miscarriage, speeding up the birth process, aborting the fetus, improving the voice, sweetening the breath, and strengthening the teeth and gums.<sup>1004</sup>

**TAI:** Abū al-Khayr al-Ishbīlī states that the name of myrrh resin in Tripoli in the al-Shām region was 'samgh al-murr'.<sup>1005</sup> Myrrh is mentioned

<sup>998</sup> Gil, II, pp. 453–454, no. 253.

<sup>999</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1000</sup> Collected references in al-Kindī, pp. 333–334, no. 283. Cf. Ibn Sina, p. 368.

<sup>1001</sup> Ibn Waḥshiyya, al-Fallaha II, p. 1256.

<sup>1002</sup> Maimonides, Poisons, pp. 112, 116, 130.

<sup>1003</sup> Maimonides, Aphorisms, 14:49.

<sup>1004</sup> Ibn al-Bayṭār, al-Jami, IV, pp. 145–147; Leclerc, no. 2102; Ibn al-Bayṭār, al-Tafsir, I, no. 55.

<sup>1005</sup> al-Ishbīlī, pp. 531–532.

in a document dated 1233 as one of the substances exported from that region to Europe (Venice).<sup>1006</sup>

## Myrtle

*Myrtus communis* (Myrtaceae), **A:** 'ās, **marsīm**<sup>1007</sup>

**D&H:** Tall evergreen shrub (up to 3 m), with dark green leaves, white flowers, and purple-black berries.<sup>1008</sup> Myrtle is one of the most famous perfume plants in ancient times, and is mentioned in the Bible in various connections. It is one of the four species (Leviticus 23:40), and a symbol of desert flowering (Isaiah 55:13). The source of the name is Greek mythology. Many legends are associated with this plant in Western and Eastern cultures alike, and it accordingly featured in various cultic rites. The use of the myrtle in Jewish culture is indicated in rabbinical writings.<sup>1009</sup> Dioscorides describes the myrtle, and listed the uses made of its oil, produced from the leaves: to treat burns, to make a dressing (compress), to treat stomach diseases and scorpion stings. A potion made of the leaves was used to dye the hair, to treat infections of the eyes and the intestines, and as an external disinfectant.<sup>1010</sup>

**PU:** Myrtle figures in 8 lists of *materia medica* (T-S Ar.35.137; T-S Ar.43.317; T-S NS 264.80; T-S NS 305.69; T-S NS 325.127; oil, T-S AS 182.222; T-S NS 306.100 [2]; pills, T-S NS 279.57) and in 2 prescriptions: for lincti and ointment (water, T-S AS 147.192) and for unknown uses (T-S NS 306.48).

**TU:** Myrtle is mentioned in medical books in recipes for the treatment of excessive lachrymation due to crying, laughing, exposure to heat or cold winds (T-S Ar.42.5) and of eye diseases: this was copied, according to Isaacs, with some variation from 'Alī b. 'Īsā's *Tadhkirat al-kaḥḥālīn* (ed. Hyderabad, p. 347; T-S NS 306.48r). Myrtle water was used for dyeing hair black (T-S Ar.40.121) and in a recommendation to wash hair with it (T-S NS 222.28). Myrtle seeds appear as a simple in a lexicon of *materia medica* (T-S AS 184.234) and in a recipe for unknown uses (T-S

<sup>1006</sup> Venice Laws, translation in Prawer, Colonial, p. 480.

<sup>1007</sup> Dinsmore & Dalman, no. 694; Issa, pp. 122–123; Maimonides, Glossaire, no. 10.

<sup>1008</sup> Chevallier, p. 236.

<sup>1009</sup> Feliks, World, pp. 99–100.

<sup>1010</sup> Dioscorides, I.155.

NS 327.100r) Myrtle leaves are mentioned in a recipe for unknown uses (T-S AS 183.106).<sup>1011</sup>

**OMU:** The physician Assaf writes that the oil of myrtles is used to cure intestinal diseases, to strengthen the stomach, to cure haemorrhoids, to strengthen the hair, and to blacken it.<sup>1012</sup> Ibn Wahshiyya describes the production of myrtle oil and its cosmetic uses, mainly to dye and condition the hair.<sup>1013</sup> According to Maimonides, myrtle is considered a cold and dry drug; its uses are for general strengthening, a medication for the stomach, spider bites (with the plant extract), and constricting the glans of the penis (with myrtle oil).<sup>1014</sup> al-Qazwīnī reports that the leaves of the plant improve body scent so they may be used instead of zinc; also that they strengthen the roots of the hair to prevent it from falling out, lengthen it and dye it black. Myrtle ash clears freckles, removes blemishes of skin diseases, and is effective against spider bites. The fruits are used to treat the teeth.<sup>1015</sup> Dāwud al-Anṭākī also lists many uses of the myrtle, among them for headaches, various types of colds, diarrhoea, haemorrhages and bleeding in haemorrhoids, wounds, hearing problems, and dissolving kidney stones.<sup>1016</sup>

**TM:** The Arabs of Israel use the myrtle for infant care and for skin irritations in children, to wash and immunize the newly born, and to treat headaches.<sup>1017</sup> In Iran and Iraq hot compresses were prepared from the plant to cure bruises. The leaves were used to treat epilepsy, lung diseases, and digestive problems, and to prepare a mouthwash. The fruit served to expel gases, to stop haemorrhages, to treat internal ulcers and rheumatism, and to cleanse the womb.<sup>1018</sup> The Jews of Iraq made extensive use of the plant for both ritual and remedial purposes: to stop haemorrhages, to treat diarrhoea and abscesses, to strengthen virility, and to eliminate intestinal worms.<sup>1019</sup> Among Yemenite Jews, myrtle tea

<sup>1011</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1012</sup> Assaph, IV.400.

<sup>1013</sup> Ibn Wahshiya, I, 146.

<sup>1014</sup> Maimonides, Regimen, 2:20; Maimonides, Aphorisms, 13:6; 21:73; Maimonides, Sexual, 8:9; Maimonides, Poisons, p. 123.

<sup>1015</sup> al-Qazwini, p. 216. Cf. al-Biruni, II, 71; Ibn Sina, pp. 245–246.

<sup>1016</sup> al-Antaki, p. 43. Cf. Ibn al-Baytar, al-Jami, 27–30; Leclerc, no. 69; al-Ghafiqi, no. 9.

<sup>1017</sup> Palevitch et al., p. 59.

<sup>1018</sup> Hooper, p. 142; al-Rawi & Chaakravarty, p. 67. See also contents of active substances.

<sup>1019</sup> Ben-Yakov, pp. 53, 55, 56, 125, 136, 216, 218, 225, 226, 254, 332, 333.

was used to reduce fever, to cure colds, to increase urination, to cure jaundice, and to remove bunions.<sup>1020</sup>

**TAI:** Many evidence on the cultivation of myrtle and its sale in the region is found in sources from the first Islamic period.<sup>1021</sup> In Mamluk times the myrtle was described by different religious sources as a plant that grows in the Levant.<sup>1022</sup> According to Genizah fragments myrtle bunches were imported into Egypt for religious purposes as one of the four species.<sup>1023</sup>

## Oak gall

*Quercus sp.* (Fagaceae), **A:** 'afaṣ, **ballūt** (acorn)

**D&H:** Oak gall is a protective tissue developed by the plant after the eggs of wasps and other pests are deposited in its branches. Oak gall is very common especially in certain species of the tree (see figure 39). The Sages mention the use of the 'afaṣ, a component in ink (Jer. Talmud, Shabbat, 12d). Dioscorides describes the medical use of oak galls (*kekides*) to cure blood flows from the gums, to relieve toothache, to blacken the hair, and to halt diarrhoea.<sup>1024</sup>

**PU:** Oak gall figures in 8 lists of *materia medica* (T-S Ar.35.328; T-S Ar.39.487; T-S AS 182.222 [2]; T-S AS 184.234; T-S NS 164.12; T-S NS 305.69; T-S AS 181.193; T-S AS 176.22) and in 7 prescriptions: for haemorrhoids (T-S Ar.44.181) and for unknown uses (T-S Ar.38.29; T-S Ar.42.152; T-S NS 151.52 [2]; T-S NS 265.62; T-S Ar.42.152). Acorn is mentioned once (T-S Ar.42.152).

**TU:** Different parts of the oak are mentioned in several medical books as simples in recipes: inner covering for the treatment of diarrhoea (powder; T-S Ar.40.179r) and powdered oak for leucoderma (embrocation; T-S AS 180.16). Gall-nuts were included as a simple in a gargling and rinsing solution for the treatment of inflammatory conditions of the tongue and gums (caused by loss of teeth; T-S Ar.40.119), dyeing the hair black (T-S Ar.40.121), stopping excessive lachrymation due to crying, laughing, exposure to heat or cold winds (T-S Ar.42.5), and eliminating

<sup>1020</sup> Reiani, no. 71.

<sup>1021</sup> al-Wasti, p. 83; al-Muqaddasi, p. 188.

<sup>1022</sup> al-Qalqashandi, p. 87; al-Badri, p. 91; Suriano, pp. 168, 170; Ya'ari, Letters, pp. 80, 298; Ya'ari, Travels, p. 92.

<sup>1023</sup> Goitein, Society, I, p. 385, IV, p. 452.

<sup>1024</sup> Dioscorides, I.146.

freckles (T-S AS 157.256). They also appear in recipes for unknown uses (T-S NS 151.52r; T-S AS 179.26) and in a lexicon of *materia medica* (T-S Ar.39.199).<sup>1025</sup>

**OMU:** According to al-Kindī, oak gall was used as a medication against haemorrhoids.<sup>1026</sup> Maimonides reports on the medical use of oak gall as a component in a medication to restore the hymen, in a medication to ‘harden the male sex organ and to increase sperm,’ and in a medication to coagulate wounds.<sup>1027</sup> Ibn al-Bayṭār states that the oak gall should be used ‘whenever it is necessary to dry’. From quotations by various physicians it appears that oak gall served to treat skin diseases and small mouth sores, and that it was also a component in a medication for nose-bleeds.<sup>1028</sup> al-Qazwīnī cites Ibn Sīnā on the use of oak gall to eliminate herpes, to protect the gums, and to guard against teeth rotting. He adds that the powder of oak gall serves to treat bleeding wounds,<sup>1029</sup> and its juice to blacken the hair.<sup>1030</sup> It was also the practice to use oak gall to manufacture ink and for the tanning industry.<sup>1031</sup>

**TM:** The Arabs of Israel commonly used galls of the Tabor oak to cure eye infections, wounds, and asthma, and also to halt diarrhoea.<sup>1032</sup> In Iraq and Iran various kinds of oak gall were used as medication for constipation, and a powder was spread over wounds.<sup>1033</sup> Yemenite Jews used gall of the terebinth to wash and disinfect wounds, reduce swellings, stop haemorrhages, cure gum infections, cure haemorrhoids, and halt diarrhoea; also for strengthening and to cure intestinal infections.<sup>1034</sup>

**TAI:** Gall-nuts were traded in the Mediterranean region, according to the Genizah fragments, between the cites of Alexandria, Ashkelon, Cairo, Qayrawān, and other locations in the Maghreb, whence they were exported to Egypt.<sup>1035</sup> A letter found in the Cairo Genizah that was sent

<sup>1025</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>1026</sup> al-Kindī, nos. 39, 54, 57, 62, 64, 67, 68, 72, 75, 77, 78, 91, 101, 106.

<sup>1027</sup> Maimonides, Sexual, 17; Maimonides, Aphorisms, 16:56; 22:63; Maimonides, Glossaire, no. 290.

<sup>1028</sup> Ibn al-Baytar, al-Jami, III, 128; Leclerc, no. 1564. Cf. al-Antaki, p. 238.

<sup>1029</sup> al-Qazwini, p. 227. Cf. Ibn Sina, p. 399; *EI*, I, p. 239.

<sup>1030</sup> al-Qazwini, p. 227.

<sup>1031</sup> al-Antaki, p. 238. Cf. modern uses in the world: Uphof, pp. 339–341.

<sup>1032</sup> Palevitch et al., p. 30.

<sup>1033</sup> Hooper, pp. 161–162; al-Rawi & Chaakravarty, pp. 80–81.

<sup>1034</sup> Reiani, no. 102.

<sup>1035</sup> Gil, Kingdom, I, p. 681; II, p. 553, no. 188, p. 715, no. 243, III, p. 552, no. 466; Gil, I, pp. 198, 225; Goitein, Society, IV, p. 405.

by a merchant in Ashkelon to a merchant in Fustat (Egypt) in 1060 mentions a sack of oak galls for export that were loaded onto a ship.<sup>1036</sup>

## Olive oil

*Olea europaea* (Oleaceae), **A:** *zayt, zayt tīb*<sup>1037</sup>

**D&H:** The olive is one of the seven species with which the Land of Israel is endowed. The tree and its products are mentioned many times in the Bible (e.g., Deuteronomy 8:8; II Kings, 18:32).<sup>1038</sup> Olive cultivation is highly developed in this region: the remains of trunks, powder, and olive stones have been discovered at numerous archaeological sites from different periods. The oil produced from the fruit was used for lighting, food and food preservation, cosmetics, cultic rites and even curative purposes (Isaiah 1:6), and to dissolve various kinds of perfumes such as the 'ointment of the apothecary' (Ecclesiastes 10:1), 'oil of myrrh' (Esther 2:12), and the 'precious ointment' (Psalms 133:2). One kind of oil is often mentioned in rabbinical sources and appears to have been an expensive oil that had medical uses.<sup>1039</sup> Dioscorides describes the use of the oil (*Elaion Omotribes*), which is highly recommended for curative purposes. Among other things it served as a component in ointments and in a medication for the stomach and toothaches. Olive oil—*Elaion koinon*—was used as lubrication for the body, to treat intestinal diseases and poisonings, to cause vomiting, and to eliminate intestinal worms; it was also a purgative drug, and a component in various kinds of medications.<sup>1040</sup>

**PU:** Different kinds of olive oil figures in 4 lists of *materia medica* (T-S Ar.42.15; T-S AS 177.139; T-S NS 306.117; T-S NS 306.117) and in 7 prescriptions: for the treatment of vomiting (T-S AS 156.272), swellings (T-S NS 194.70 [2]), in a linctus and an ointment (T-S AS 147.192), and for unknown uses (T-S Ar.29.137; T-S NS 265.62 [2]; T-S AS 177.39; T-S AS 214.96).

**TU:** Olive oil is mentioned in medical books in recipes for the treatment of skin diseases (T-S AS 180.162), and weeping discharge from the

<sup>1036</sup> Gil, III, pp. 186–190, no. 487.

<sup>1037</sup> Maimonides, Glossaire, nos. 130–131.

<sup>1038</sup> Feliks, Fruit Trees, p. 25.

<sup>1039</sup> Feliks, World, pp. 25–32.

<sup>1040</sup> Dioscorides, I.29–30.

eye (application of the precipitate of olive oil to the forehead: from ‘Alī b. ‘Isā’s *Tadhkirat al-kaḥḥālīn*, third discourse, chapter 27, ed. Hyderabad, pp.368–69; T-S Ar.11.10); also at the beginning of a medical work which starts with the *basmalah* and refers to the sayings of the sages. The text starts with a recipe for cleansing facial skin and resolving puffiness under the eyelids, tetter, and ulcerated scabs; in addition to olive oil, garlic, mustard, nard, and lard are mentioned (T-S AS 180.231r). It also appears as a simple in lexica of *materia medica* (T-S Ar.41.45; T-S AS 183.279).<sup>1041</sup>

**OMU:** The physician Assaf reports on the many and varied uses of olive oil, such as curing diseases of the intestines, eyes, and skin, treating the teeth, strengthening the hair, warming the head, treating poisoning from bites and stings, and eliminating intestinal worms.<sup>1042</sup> According to al-Kindī, olive leaves are a component in a toothpaste and also serve to treat the gums.<sup>1043</sup> Olive oil was used as a medicine to treat swelling of the lips, burns, scratches, haemorrhoids, joint pains, and poisoning.<sup>1044</sup> According to Maimonides, various types of olive oil are used as components in a medication for leprosy. The olive strengthened the stomach and increased appetite.<sup>1045</sup> The Jerusalemite physician al-Tamīmī notes that wild vegetables consumed in the al-Shām region are enhanced by frying in olive oil.<sup>1046</sup> The residents of Jerusalem cooked the root of the *Coronopus squamatus* mashed in oil and salt to cure pains of the back and knees.<sup>1047</sup> According to Ibn al-Bayṭār olive oil is used to treat the teeth and asthma.<sup>1048</sup>

**TM:** In Iraq and Iran the leaves were used as a component in a medication against cough, and as a constricting drug, a disinfectant, a diuretic, and a stimulant. Olive oil was used for nourishment, to lubricate the body, to cure skin diseases, and as a component in many medications.<sup>1049</sup> Yemenite Jews used the leaves to cure wounds, colds, and jaundice; the fruit was used to improve appetite, to regulate bowel movement, and

<sup>1041</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>1042</sup> Assaph, IV, 397.

<sup>1043</sup> al-Kindī, nos. 89, 102.

<sup>1044</sup> Ibid., nos. 12, 20, 46, 76, 120, 129, 131, 135, 138, 185.

<sup>1045</sup> Maimonides, Aphorisms, 9:108; 20:56; Maimonides, Glossaire, nos. 130, 131.

<sup>1046</sup> In Ibn al-Baytar, al-Jami, I, 34, III, 129.

<sup>1047</sup> Ibid., II, 136.

<sup>1048</sup> Ibn al-Baytar, al-Jami, II, p. 175; Leclerc, no. 1140.

<sup>1049</sup> Hooper, p. 146; al-Rawi & Chaakravarty, pp. 69–70, with contents of active substances.

to treat vomiting and nausea; olive juice served to strengthen the teeth, and the oil was a base for ointments, for creams, and for medications to strengthen the eyesight and treat pains, haemorrhoids, dandruff, problems of the teeth and gums, burns, and weak nerves.<sup>1050</sup> In Europe and in England olive leaves were used as a disinfecting drug, for constriction, and as a carminative, and also to reduce fever. Olive oil served as a purgative, relieved pains, stings, and bites, counteracted poisons, and was a component in medications.<sup>1051</sup>

**TAI:** Olive oil was a foremost component in many medications in the Middle Ages. Mentioned below are the major and important sources on the subject. The olive tree was an important agricultural crop in the Levant in the Byzantine period and throughout the Middle Ages. It was exported to Egypt from early times: ‘and oil is carried into Egypt’ (Hosea, 12,3). Olive plantations characterized the landscape of the Levant, and the oil industry produced quantities sufficient for export to neighbouring countries. From the 10th century soap began to be produced from surplus oil for local use and for export, and this industry also flourished.<sup>1052</sup> al-Birūnī states that olive oil was imported from Syria on the backs of camels and was used as a constricting drug that hardened the stomach and cured leprosy.<sup>1053</sup> Ibn al-Bayṭār describes the extensive use of the olive oil for curative purposes; in Egypt the oil was called ‘al-zayt al-falaṣṭīnī’ (Land of Israel oil).<sup>1054</sup> Tens of Genizah fragments describe the import of olive oil to Egypt from Tunisia,<sup>1055</sup> Sicily,<sup>1056</sup> and the Land of Israel.<sup>1057</sup>

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<sup>1050</sup> Reiani, no. 78.

<sup>1051</sup> Grieve, pp. 598–599. Additional uses and general uses in Uphof, pp. 372–373.

<sup>1052</sup> In detail in Amar, *Production*, pp. 118–147.

<sup>1053</sup> al-Biruni, I, pp. 172–175.

<sup>1054</sup> Ibn al-Baytar, *al-Jami*, II, p. 179; Leclerc, no. 1146. Cf. Maimonides, *Glossaire*, no. 131; Renaud & Colin, p. 71, nos. 154–155; Kohen, *al-Attar*, p. 228. Additional sources in Amar, *Production*, p. 131.

<sup>1055</sup> Goitein, *Society*, I, pp. 120, 152, 200, 344.

<sup>1056</sup> Gil, *Kingdom*, I, p. 563.

<sup>1057</sup> Amar, *Production*, pp. 159–160, Gil, I, p. 195.



## Onion

*Allium cepa* (Alliaceae), **A: baṣal**

**D&H:** The onion is an ancient cultivated crop that was known in India, Greece, and Egypt. It is mentioned in the Bible in connection with the wandering of the Israelites in the wilderness, when they longed for the onions they had eaten in Egypt (Numbers, 11:5). In the age of the Mishna it was widely grown, and the Sages mention it frequently in various connections.<sup>1058</sup> Muslim tradition often refers to it too, for example, the words of the Prophet concerning its uses, including medical applications.<sup>1059</sup>

**PU:** Onion figures in 4 lists of *materia medica* (T-S Ar.35.229; T-S Ar.39.136; T-S Ar.39.139; T-S Or.1081.J.71) and in 6 prescriptions: for a linctus for cough (seeds, T-S AS 148.22), for topical application (T-S Ar.30.99), for dressing bites (T-S NS 164.98), for swelling (T-S NS 194.70), and for unknown uses (T-S NS 306.41; T-S NS 306.48).

**TU:** Onion is mentioned in medicine books as a simple in recipes for the treatment of eye complaints with collyria and venesection (T-S AS 179.59), swelling of the ear (citing Ibn Sīnā and al-Jawharī; T-S AS 183.197), paresis and weakness of the sexual organ, and as an aphrodisiac (T-S AS 179.226). It also appears in a recommendation to a patient for unknown uses, which includes eating chicken soup and onions and chickpeas (T-S AS 166.208r).<sup>1060</sup>

**OMU:** Maimonides states that the onion is a bad food, and that it is better to limit its eating to the winter. Since it is not nourishing, Maimonides recommends its use to the overweight. Citing the Jerusalemite al-Tamīmī, Maimonides reports that the onion prevents vomiting. Onion, and garlic, are called 'sharp and loosening drugs, because they loosened the openings of veins from below'. The onion is one of the foods recommended to those who have been bitten.<sup>1061</sup> al-Ghāfiqī cites classical physicians on the medical use of the onion, and adds that after cooking it serves as a drug that stimulates desire; eaten raw, it purifies water of various kinds.<sup>1062</sup> Ibn al-Bayṭār likewise cites classical physicians, as well as his contemporaries, on the many medical uses of the onion, among them strengthening desire, strengthening memory, increasing appetite,

<sup>1058</sup> Low, II, pp. 125–131; Feliks, Plants, p. 38; Feliks, World, pp. 169–170.

<sup>1059</sup> Ibn al-Qayyim, pp. 199–200.

<sup>1060</sup> Isaacs & Baker, see indexes.

<sup>1061</sup> Maimonides, Aphorisms, 2:4; 9:101; 13:54; 23:96; Maimonides, Regimen, p. 138; Maimonides, Poisons, p. 133.

<sup>1062</sup> al-Ghāfiqī, no. 134.

cleansing the chest and lungs, cleaning wounds, halting coughs, and drying tears.<sup>1063</sup>

**TM:** The onion has many uses in the framework of traditional Arab medicine. Among the Bedouin for example, it serves to treat toothache, colds, snakebite, and scorpion stings, to immunize infants, and to purify wounds.<sup>1064</sup> These and other uses were also common practice in Iraq and Iran.<sup>1065</sup> The Jews of Iraq and the Yemen describe similar uses such as treating haemorrhoids.<sup>1066</sup>

**TAI:** Ibn al-Bayṭār describes ‘baṣal ‘asqalānī’ (Ashkelon onion or scallion) and its medical uses.<sup>1067</sup> In a document from the Genizah dated 1065, the onion is mentioned as a commodity available in Jerusalem.<sup>1068</sup> In Acre it was considered in the 12th and 13th centuries as a basic food product.<sup>1069</sup> During the Ottoman period the onions in Jerusalem were deemed a taxable property, and were a cheap product in the markets.<sup>1070</sup> Onion is mentioned as an important foodstuff in Egypt in some documents.<sup>1071</sup>

## Opium

Poppy head, *Papaver somniferum* (Papavraceae), **A:** **afyūn, khash-khāsh**<sup>1072</sup>

**D&H:** Thick stemmed annual (1 m), with many dull green leaves, solitary pink, purple or white flowers, and globe-shaped seed capsules. The latex that flows from the plant was used medicinally.<sup>1073</sup> The poppy is listed among the important medicinal plants among the Assyrians, the first evidence of whose use is dated to some six millennia ago. Poppy heads were found in the graves of the Pharaohs in Egypt, and their inscriptions

<sup>1063</sup> Ibn al-Baytar, al-Jami, I, pp. 96–97; Leclerc, no. 296. Cf. Ibn Sina, p. 268.

<sup>1064</sup> Abu-Rabia, pp. 15–16.

<sup>1065</sup> Hooper, p. 82; al-Rawi & Chaakravarty, pp. 9–10, including content of active substances.

<sup>1066</sup> Reiani, no. 4. Collected references in Ben-Yakov, p. 702. Compare Grieve, pp. 599–600.

<sup>1067</sup> Ibn al-Baytar, al-Jami, I, pp. 96–97; Leclerc, no. 296.

<sup>1068</sup> Gil, no. 501.

<sup>1069</sup> Ibn Jubayr, p. 314; Beugnot, II, 179–180.

<sup>1070</sup> Yaʿari, Travels, p. 279; Cohen, 18 century, p. 374, no. 428; Mantran & Sauvaget, p. 39.

<sup>1071</sup> Goitein, Society, IV, pp. 230, 233.

<sup>1072</sup> Maimonides, Glossaire, nos. 35, 109, 401; Issa, p. 134, no. 7; Dinsmore & Dalman, no. 45.

<sup>1073</sup> Chevallier, p. 242.

show that it had the function of a soothing drug.<sup>1074</sup> The poppy is not mentioned in the Bible, but Feliks identified the biblical 'rosh', which is a poison plant, with the poppy (Jeremiah 8:14). In his view, this identification suited the form of the round poppy head.<sup>1075</sup> Dioscorides notes that the seeds of the cultivated poppy (*Mekon agrios & emeris*) were good to eat and the poppy head contained narcotic substances. The resin aided digestion and soothed pains, but a high dosage induced deep sleep and was even deadly. The liquid resin is condensed with a special pestle to prepare pills.<sup>1076</sup> The cultivated poppy and its products were used in the Hellenistic and Roman cultures, and later in the Muslim world and in Turkey.<sup>1077</sup> The method of producing opium is ancient: the poppy heads are split two weeks before ripening with a special instrument, and during the night the milky white resin flows out. The centres of production are in India and in Muslim countries in the Near East (where it served as a substitute for the forbidden liquors). Opium is eaten or smoked.<sup>1078</sup>

**PU:** Opium figures in 2 lists of *materia medica* (T-S NS 305.69 [2]; T-S AS 182.222) and in 5 prescriptions: for wind and colic (T-S NS 305.50), eye diseases (T-S Ar.44.162 [3]), collyrium (Egyptian kind, T-S AS 153.89) and for unknown uses (T-S NS 297.17; T-S AS 172.25).

**TU:** Opium and its uses are mentioned in a medical book for general uses (T-S K 14.49) and in recipes for the treatment of jaundice with acute fever and palpitation (T-S NS 305.116) and loss of teeth (T-S NS 306.73). Colocynth roots soaked in opium or pure vinegar are a recipe for the treatment of diseases affecting the tongue that may result in suffocation (quoting Galen), a gargle for swollen throat and to ease tooth extraction (T-S Ar.41.30). It also features as a simple in lists and lexica of *materia medica* (T-S Ar.39.468; T-S AS 172.254; T-S AS 141.49A; T-S AS 159.67) and in a preparation for unknown uses (T-S NS 222.26); also as a simple in another such preparation (T-S AS 179.262). Poppy peel was used for dyeing hair black (T-S Ar.40.121). Poppy seeds are mentioned in a recipe for unknown uses extracted from Ibn Sinā's *al-Qānūn* (cf. ed. Bulaq, III, 302–3; T-S Ar.41.96) and in a M.M. list (T-S NS 306.115), and white poppy as a simple in an electuary for colds (T-S Ar.11.13).<sup>1079</sup>

<sup>1074</sup> Palevitch, *Plants*, p. 265.

<sup>1075</sup> Feliks, *World*, p. 197.

<sup>1076</sup> Dioscorides, IV.65.

<sup>1077</sup> Demirhan.

<sup>1078</sup> Hasselquist, p. 299; Zohary, p. 324.

<sup>1079</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

**OMU:** The physician Assaf states that the roots are effective in curing pains of the thigh sinew, the liver, and the head, and also for inducing sleep. The seed is useful in treating cough, the liver, and the intestines.<sup>1080</sup> al-Kindī notes the extensive use of opium for various needs such as strengthening the teeth and gums, and treating eye diseases and mental illness.<sup>1081</sup> According to Shabbetai Donolo, it is one of the important resins for the pharmacist in preparing medications, mainly to treat malaria and poisoning.<sup>1082</sup> Maimonides notes that it is listed among the components of ‘theriac’, a dressing placed on a spider sting, and it is a soporific.<sup>1083</sup> Elsewhere he also reports that the poppy serves as a sleeping medicine, and that is part of a medication against ‘blood spitting’ and cough. Poppy seeds are cold, edible, harmless, induce sleep, and help to reduce fever.<sup>1084</sup> Ibn al-Bayṭār in his entry ‘murqīd’ notes that this term is a synonym for opium.<sup>1085</sup> In the entry ‘ufyūn’ he describes other medical and general uses of the substance in Egypt and in the Near East, and important physicians of his generation are cited.<sup>1086</sup>

**TM:** Oil is produced from poppy seeds and they are used as condiments for various kinds of baked pastries and cooked dishes.<sup>1087</sup> Yemenite Jews used the fruit of the poppy to make a soothing and sleep-inducing tea. The seeds are used to cure cough.<sup>1088</sup> In Iraq, the plant serves to treat the nervous system and to produce opium to relieve pain, to induce sleep, and as a hypnotic and narcotic drug.<sup>1089</sup>

**TAI:** Opium was traded by Jewish merchants around the Mediterranean in the Middle Ages, and it was sold as a medicine.<sup>1090</sup>

<sup>1080</sup> Assaph, IV, 415.

<sup>1081</sup> al-Kindī, nos. 98, 150, 162, 205. Cf. Ibn Sina, pp. 256–257.

<sup>1082</sup> Donolo, p. 15, and discussion on p. 48.

<sup>1083</sup> Maimonides, Poisons, pp. 93, 123, 144; Maimonides, Sexual, 5:1; 18:1, 2, 5. Compare al-Biruni, II, 56.

<sup>1084</sup> Maimonides, Aphorisms, p. 9:38; 20:50; Maimonides, Answers, 21:11.

<sup>1085</sup> Ibn al-Baytar, al-Jami, IV, p. 154; Leclerc, no. 2120.

<sup>1086</sup> Ibn al-Baytar, al-Jami, I, pp. 45–46; Leclerc, no. 216.

<sup>1087</sup> Zohary, p. 324; Hooper, p. 148; Hill, p. 197; Loewenfeld & Back, p. 206.

<sup>1088</sup> Reiani, p. 37, no. 81.

<sup>1089</sup> In detail, including content of active substances, it is found in al-Rawi & Chaakravyarty, p. 72.

<sup>1090</sup> Goitein, Society, II, pp. 262, 270, Gil, Kingdom, II, p. 813, no. 273; p. 818, no. 274; IV, p. 325, no. 325.

## Pearl

*Pinctada margaritifera* (Pteriidae), **A:** lu'lu'

**D&H:** Some medieval Bible commentators identified the Biblical 'peninim' (Prov. 20,15) as *lu'lu'*. The pearl is a precious stone found in various sea shells, mainly *Pinctada margaritifera* found in tropical seas.<sup>1091</sup> It was used in classical times for heart palpitation, fear, eye diseases, and headaches.<sup>1092</sup>

**PU:** Pearls figure in 3 lists of *materia medica* (T-S Ar.39.136; T-S NS 305.69; T-S NS 321.49) and in 4 prescriptions: for eye complaints (T-S NS 218.21) and for unknown uses (T-S Ar.43.338 [2]; T-S AS 176.494; T-S AS 183.216).

**TU:** Pearls are mentioned in medical books in a recipe for unknown uses (T-S AS 180.171) and in a one for the treatment of entropion and roughness of the eyelids (T-S Ar.39.167). Pearl powder was recommended for the treatment of depression, palpitations, and hot temperament, as well as for strengthening the stomach and liver (T-S Ar.40.180). The use of pearls in medicine and the way it was fished are mentioned in a quasi-medical fragment (T-S Ar.39.183).<sup>1093</sup>

**OMU:** According to al-Kindī, pearls were used to treat gums, tonsils, teeth, uvula, and throat (in Jewish oral medicine). It was also used to treat eye diseases.<sup>1094</sup> R. Nathan ben Yoel Falaqera writes that pearl is used to treat liver ailments and pain, eye weakness, and depression.<sup>1095</sup>

**TAI:** Pearls are mentioned in more than 100 fragments as an important commodity traded by the Jewish merchants. It was imported from Egypt to Tyre,<sup>1096</sup> Land of Israel,<sup>1097</sup> Palermo,<sup>1098</sup> Tunisia,<sup>1099</sup> and many other destinations.<sup>1100</sup>

<sup>1091</sup> Plants & Animals, IV, p. 198.

<sup>1092</sup> al-Kindi, p. 331, no. 277.

<sup>1093</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1094</sup> al-Kindi, p. 331, no. 277.

<sup>1095</sup> Amar & Buchman, p. 205.

<sup>1096</sup> Gil, II, p. 499, no. 280.

<sup>1097</sup> Gil, III, p. 272, no. 508.

<sup>1098</sup> Gil, Kingdom, I, p. 566; IV, p. 934 index, 60 fragments in which pearls are mentioned.

<sup>1099</sup> Goitein, Society, I, pp. 154–155, 202.

<sup>1100</sup> Ben-Sasson, p. 724 mentions 15 fragments in his index in which pearls were mentioned, Goitein, Society, IV, pp. 202–204.

## Peony

*Paeonia* sp. (Paeoniaceae), **A:** *fāwāniyā*, *‘ūd riḥ*<sup>1101</sup>

**D&H:** The species *Paeonia officinalis* is widespread in Europe. The species *Paeonia mascula* grows on Mt. Meron and in Lebanon. A synonym for it is *Paeonia copallina*.<sup>1102</sup> The plant's name derives from 'Paion', the physician of the gods, who according to legend healed Pluto and other gods during the Trojan War with the help of this plant. The Greeks considered this plant the primary source of healing that was revealed to humans.<sup>1103</sup> They soaked peony seeds in wine and held that the drink was a medication against nightmares, convulsions, nervous ailments, epilepsy, headaches, disturbances of the liver, and also against the evil eye, lunacy, and evil spirits. Dioscorides, in his entry *Paionia*, describes several species with their names and uses, among which were cleansing the female sexual organs after childbirth, soothing stomach pains, and halting diarrhoea.<sup>1104</sup>

**PU:** Peony figures in 4 lists of *materia medica* (T-S Ar.30.274 [2]; T-S Ar.39.450; T-S NS 305.69; T-S AS 183.159) and in 3 prescriptions for unknown uses (T-S Ar.38.29 [2]; T-S Ar.42.152; T-S AS 176.494).

**TU:** Peony is mentioned in general medical books (T-S Ar.40.104; T-S Ar.42.199; T-S AS 144.306; T-S AS 182.262) and pharmacopoeias (T-S NS 164.152).<sup>1105</sup>

**OMU:** Ibn al-Bayṭār cites the Jerusalem physician al-Tamīmī reporting the use of the peony against fear, epilepsy, and insanity.<sup>1106</sup> He describes the plant and notes its different names in the Levant.<sup>1107</sup> Maimonides states that the peony's root, if hung around the neck of a boy suffering from epilepsy, was a tried and tested remedy. Peony is listed among the hot and dry drugs.<sup>1108</sup> The use of peony for epilepsy (the falling sickness) also appears in the book by al-Bīrūnī.<sup>1109</sup> Ibn al-Bayṭār describes the plant and presents its medical uses according to the classical physicians Galen and Dioscorides (causing constipation, increasing menstruation,

<sup>1101</sup> Maimonides, Glossaire, no. 304; Issa, p. 132, no. 5.

<sup>1102</sup> Plants & Animals, X, 88; Zohary, p. 366.

<sup>1103</sup> Amar, Peony.

<sup>1104</sup> Dioscorides, III.157.

<sup>1105</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1106</sup> Ibn al-Baytar, al-Jami, III, 152–153; Leclerc no. 1648.

<sup>1107</sup> Ibid.

<sup>1108</sup> Maimonides, Aphorisms, 21:70; 22:18.

<sup>1109</sup> al-Biruni, I, p. 248.

and cleansing the liver and kidneys). From his references to Arab physicians it appears that peony served to treat skin diseases, wounds, swellings, epilepsy, and insanity.<sup>1110</sup>

**TM:** Since medieval times the plant has served in many countries for decoration. Necklaces of the blue-black seeds were used to drive off demons and spirits.<sup>1111</sup> In Europe and Asia various species of the peony were used for medical purposes. In Europe potions were prepared from the plant to treat nervous ailments, internal problems (of the stomach and liver), and nightmares.<sup>1112</sup>

**TAI:** al-Dimashqī (14th cent.) states that the peony was one of the 90 species of useful drugs found on Mt. Lebanon that could be gathered as a means of livelihood.<sup>1113</sup>

## Pepper

Black pepper, *Piper nigrum* (Piperaceae), **A: filfil, fulful**

**D&H:** Perennial woody tropical climber (up to 5 m.), with large oval leaves, spikes of small white flowers, and clusters of small round fruits, which ripen from green to red (see figure 41).<sup>1114</sup> Maimonides identifies the Biblical 'tavlin' with black pepper and white pepper. Theophrastus describes the plant, is acquainted with the different species, and among them notes the long pepper and the black pepper. According to Dioscorides, *Piperi*, identified with black pepper, is a medicine against poisons, a component in medications for the eyes, prevents pregnancy, cures cough and chest diseases, reduces pain, and improves the appetite.<sup>1115</sup> Pepper is mentioned in the rabbinical writings and this is the accepted identification by commentators for the above-mentioned 'tavlin' (condiment) (e.g., Mishna, Orla, 2:10). The commercial value of various species of pepper in ancient times in general and in medieval times in particular was very high. Many researchers maintain that pepper was the condiment of primary importance and even served as a means of exchange instead of silver coinage.<sup>1116</sup>

<sup>1110</sup> Ibn al-Baytar, al-Jami, III, 152–153; Leclerc, no. 1648. Cf. al-Razi, III, 21.

<sup>1111</sup> Plants & Animals, X, p. 88.

<sup>1112</sup> Grieve, pp. 606–607; Uphof, p. 381.

<sup>1113</sup> al-Dimashqī, p. 199.

<sup>1114</sup> Chevallier, p. 248.

<sup>1115</sup> Dioscorides, II.159.

<sup>1116</sup> Prawer, Colonial, p. 125.

**PU:** Pepper figures in 21 lists of *materia medica* (T-S Ar.30.274; T-S Ar.35.137; T-S Ar.35.252; T-S Ar.35.326; T-S Ar.35.328; T-S Ar.35.82; T-S Ar.39.450 [2]; T-S AS 153.51; T-S AS 169.199; T-S AS 176.22; T-S AS 177.139; T-S AS 179.132; T-S AS 181.109; T-S AS 182.222; T-S AS 182.233; T-S AS 184.234; T-S AS 214.96; T-S NS 264.80; T-S NS 305.38; T-S NS 305.69; T-S NS 306.117) and in 13 prescriptions: for eye diseases (T-S Ar.44.162), as a purgative (T-S Ar.41.72), and for unknown uses (T-S Ar.30.291; T-S Ar.34.159; T-S Ar.35.252; T-S AS 173.3; T-S AS 177.39; T-S AS 177.40; T-S AS 179.283; T-S NS 265.62; T-S NS 297.17; T-S NS 327.40 [2]; T-S Or.1080.1.87).

**TU:** Pepper features extensively in medical books: in recipes for the treatment of stones in the bladder (T-S K14.18; T-S K14.5), inflammatory conditions of the tongue and gums, loss of teeth (solution for gargling and rinsing; T-S Ar.40.119), excessive lachrymation due to crying, laughing, exposure to heat or cold winds (T-S Ar.42.5), insufflation and venesection (T-S AS 176.501), paresis and weakness of the sexual organs (aphrodisiacs; T-S AS 179.226), deafness, earache, and throbbing headache (T-S AS 180.135), and complaints in the joints (upper and lower extremities; T-S AS 181.271). It is also mentioned in lexica of *materia medica* (T-S Ar.35.229; T-S Ar.43.317; T-S NS 306.115; T-S AS 176.22); in one Dioscorides, Galen, Ibn Māsawayh, and al-Khūzī are cited (T-S Ar.41.44), in a prescription for unknown uses (T-S AS 169.199), in other prescriptions (T-S Ar.41.90; T-S AS 144.227; T-S AS 169.282; T-S AS 179.26; T-S AS 180.59), as paste (T-S Ar.42.46; T-S AS 182.37), and in a preparation by the anonymous pharmacist known as al-Dimashqī (the Damascene; T-S Ar.39.65). Black pepper is mentioned in recipes for epilepsy, intestinal ulcer, colic, kidney and bladder disease, and tænia of the scalp (T-S AS 179.302), weakness and dimness of vision and drooping eyelids (T-S Ar.41.40), and in a list of *materia medica* (T-S AS 150.136). White pepper is also noted in recipes for unknown uses (T-S NS 222.26), one attributed to Galen or Archigenes (T-S NS 306.54) and in a lexicon of *materia medica* (T-S AS 150.136).<sup>1117</sup>

**OMU:** According to al-Kindī, pepper is a component in medications for pains of the gums and throat, and also serves to cure the eyes and stomach diseases, as well as to improve the sense of well being.<sup>1118</sup> Maimonides states that pepper also improves digestion, dispels gases, and serves as

<sup>1117</sup> Isaacs & Baker, see indexes.

<sup>1118</sup> al-Kindī, nos. 77, 91, 151, 216, 225. Cf. Ibn Sina, pp. 406–407.



a component in a 'concoction to strengthen respiration, revive the spirits, stimulate coitus, stiffen the sexual organ and increase sperm'. Black pepper also served as a component in 'theriac'.<sup>1119</sup> Pepper was a hot and dry drug and was used extensively.<sup>1120</sup> Ibn al-Baytār describes the plant, giving its medical history and noting its uses during his own period. He also cites al-Ghāfiqī to describe the use of the pepper to arouse desire and cure the gall bladder.<sup>1121</sup> al-Qazwīnī describes the plant and its natural habitat in India, where it is a wild plant. Among the uses he lists are: as a drug against injury by crawling insects, to increase sexual desire; it is effective against loss of consciousness, curing skin diseases, increasing urination, improving eyesight, and preventing pregnancy.<sup>1122</sup>

**TM:** Black pepper continues to be used as a medicinal substance even in the 20th century and is mentioned among 40 species that are well known.<sup>1123</sup> Among Yemenite Jews, 'black pepper' is also called 'hot pepper' and is used extensively to treat colds and fever, pains, coughs, nausea, and vomiting, and also to increase the appetite. The crushed fruit serves as a diuretic substance, strengthens the stomach, the voice, and virility, cures haemorrhoids, and prevents pregnancy.<sup>1124</sup>

**TAI:** Pepper was one of the most important commodities, and the Jewish merchants traded it among the main Middle Eastern and Mediterranean cities such as Alexandria, Cairo, Ramlah, Sidon, Qayrawān, Mahdiyya, Palermo, elsewhere in Sicily, Mazara, Tripoli (Libya), and Susa. Egypt was the main transit port in between East and West. In several letters the writers emphasize the Byzantine desire for pepper supply.<sup>1125</sup> Pepper is listed among the products exported from Acre to Europe.<sup>1126</sup> Black pepper and long pepper are also among the kinds of merchandise listed in the Venice maritime laws of 1233. It was exported from Syria and imported to Europe,<sup>1127</sup> with Acre as the main port dealing with this

<sup>1119</sup> Maimonides, *Regimen*, 3:11; Maimonides, *Aphorisms*, 21:38; Maimonides, *Sexual*, 5; Maimonides, *Poisons*, p. 113.

<sup>1120</sup> Maimonides, *Aphorisms*, 9:88; 21:85, 88.

<sup>1121</sup> Ibn al-Baytar, *al-Jami*, III, pp. 166–167; Leclerc, no. 1696.

<sup>1122</sup> al-Qazwini, p. 228. Cf. al-Biruni, I, 253–254; II, 81.

<sup>1123</sup> Crowfoot & Baldensperger, p. 97.

<sup>1124</sup> *Ibid.*, p. 91.

<sup>1125</sup> Gil, III, p. 272, no. 508, *Gil Kingdom*, IV, pp. 931–932. 100 fragments in which pepper is mentioned, Goitein, *Society*, I, pp. 44, 154, 167, 376, 219, 220–222; Ben-Sasson p. 724, about 100 fragments in which pepper is mentioned are found in the indexes.

<sup>1126</sup> Beugnot, II, 173.

<sup>1127</sup> Venice Laws, p. 285.

export at least until the end of the 14th century.<sup>1128</sup> Various sources report that even in the 15th century the traders (mainly Venetians) continued to trade and buy different kinds of merchandise in Acre and Ramlah, including pepper.<sup>1129</sup>

### Perfumed cherry

*Prunus mahaleb* (Rosaceae), **A: mahlab**<sup>1130</sup>

**D&H:** Seeds of tall deciduous tree, with elliptic bald fruit which hardly open (see figure 42). The trunk is used as stock for cherry.

**PU:** Perfumed cherry figures in 8 lists of *materia medica* (T-S Ar.35.252; T-S AS 179.132; T-S Ar.35.327; T-S Ar.39.450; T-S Ar.51.53; T-S AS 182.233; T-S AS 184.187; T-S NS 306.106) and in a prescription for unknown uses (T-S Ar.39.184).

**TU:** Perfumed cherry is mentioned as a simple in medical books, one of which is a lexicon, arranged alphabetically, with heading for what is numbered chapter 6 (letter ‘ḥā’; T-S Ar.41.37) and in another lexicon of *materia medica* (T-S AS 148.7).<sup>1131</sup>

**OMU:** Ibn Waḥshiyya describes the production of medical oil from the seeds of the tree cooked in oil with the addition of other medicinal plants.<sup>1132</sup> Al-Bīrūnī notes the use of the seeds for washing the hands because of its good scent.<sup>1133</sup> According to Maimonides, the plant is a hot and dry drug.<sup>1134</sup>

**TM and other uses:** The wood of the tree is hard and serves for making household utensils and smoking pipes, and the leaves are used as a condiment for milk and a substitute for tobacco.<sup>1135</sup> Yemenite Jews used the seeds of the tree to cure the kidneys, to regulate urination, to relieve stomachache, to bring up phlegm, to strengthen the lungs, and to treat

<sup>1128</sup> Ashtor, *Trade*, p. 283.

<sup>1129</sup> *Ibid.*, p. 285, n. 30.

<sup>1130</sup> Issa, p. 149, no. 4; Maimonides, *Glossaire*, no. 220; Leclerc, no. 1608.

<sup>1131</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1132</sup> Ibn Waḥshiyya, II, p. 1224.

<sup>1133</sup> al-Bīrūnī, I, p. 301.

<sup>1134</sup> Maimonides, *Aphorisms*, 21:71. Cf. and see additional uses in Ibn Sina, p. 369.

<sup>1135</sup> Uphof, p. 431.

worms and joint pains.<sup>1136</sup> In Iraq they used the fruit and the seeds to relieve stomachache and to cure general weakness.<sup>1137</sup>

**TAI:** According to Abū al-Khayr al-Ishbīlī, the perfumed cherry was a known medicinal tree in ‘Andalus’ (Spain) and in the al-Shām region.<sup>1138</sup> It was traded, according to merchants’ letters from the Genizah, in Cairo, Qayrawān, and Sicily.<sup>1139</sup>

### Pistachio, Atlantic

*Pistacia atlantica* (Anacardiaceae),<sup>1140</sup> **A:** **butm**, **‘ilk** [resin]

**D&H:** The pistachio tree is frequently mentioned in the Bible and the rabbinic literature.<sup>1141</sup> The ‘nuts’ mentioned as part of the ‘choice fruits of the land’ (Genesis 43:11) may be the fruit of *Pistacia vera* or *Pistacia atlantica*.<sup>1142</sup> In the period of the Mishna and Talmud pistachio was also called by its Aramaic name ‘botmin’ (Jer. Talmud, Kil’ayim, 27a) while the fruit was called ‘fistikin’, as it is today in Arabic and Greek.<sup>1143</sup> Dioscorides describes the *Terminthos*, identified with the *Pistacia terebinthus*,<sup>1144</sup> and notes that it grows in Petra, Judea, Syria, and Cyprus. According to him, the resin produced from it serves for strengthening the stomach, treating the eyes and ears, and as a purgative.<sup>1145</sup> Many medieval sources describe the varieties of pistachio that grow in Israel and their many uses: to produce oil, to mark boundaries, and as sacred trees planted over the graves of saints.<sup>1146</sup> In the past and in the present various kinds of pistachio trees were extensively used: its fruits were used as food and oil and other products were extracted from it.<sup>1147</sup>

<sup>1136</sup> Reiani, no. 99.

<sup>1137</sup> Hooper, p. 159; al-Rawi & Chaakravarty, p. 78, with content of active substances.

<sup>1138</sup> al-Ishbīlī, pp. 475–476.

<sup>1139</sup> Gil, Kingdom, II, pp. 312–323, no. 114; III, p. 334, no. 392; Ben-Sasson, p. 262; Goitein, Society, p. 912, no. 575.

<sup>1140</sup> Maimonides, Glossaire, no. 301; Issa, pp. 141–142; Dinsmore & Dalman, nos. 402–404.

<sup>1141</sup> Feliks, World, pp. 104–106; Low, I, pp. 190–200.

<sup>1142</sup> Zohary, p. 484.

<sup>1143</sup> Discussion of identity in Amar, Production, p. 41.

<sup>1144</sup> According to the researcher Issa, this species was the Palestinian pistacia or a closely related type. See Issa, p. 141, no. 14.

<sup>1145</sup> Dioscorides, I.91. About this species, see Uphof, p. 413.

<sup>1146</sup> Amar, Production, pp. 42–44; Rabbi Moshe Bassola in Ya’ari, Travels, p. 141.

<sup>1147</sup> Amar, Landscape, pp. 118–121.

**PU:** Different kinds of pistachio products figure in 2 lists of *materia medica* (T-S NS 306.117; resin, T-S AS 181.109) and in 4 prescriptions: for chewing gum (T-S Ar.42.20) and for unknown uses (T-S Ar.35.295; resin, T-S Ar.41.81; T-S NS 265.62).

**TU:** Pistachio products are also mentioned in medical books (T-S Ar.11.31; T-S Ar.40.1; T-S Ar.40.160; T-S Ar.43.95), books on dentistry (T-S AS 177.338), sex (T-S Ar.41.75), dermatology (T-S Ar.45.49), *materia medica* (T-S AS 179.308; T-S Or.1080.4.24), pharmacopoeias (T-S Ar.45.31), quasi-medicine (T-S Ar.41.115; T-S NS 306.29), and other fragments (T-S Ar.38.67; T-S AS 181.57).<sup>1148</sup>

**OMU:** The physician Assaf reports the use of ‘shemen botnim’ (nut oil) to cure the kidneys, internal diseases, various kinds of colds including ‘women’s wombs’, and to relieve birth pangs.<sup>1149</sup> Shabbetai Donolo describes in detail the use of the resin of the pistachio for curative purposes as a component in medications and dressings.<sup>1150</sup> al-Kindī, al-Rāzī,<sup>1151</sup> Ibn Sīnā, and others note the special quality of the ‘al-Shāmī’ species. Ibn al-Bayṭār, in his entry ‘Fustuq’ describes the tree and its fruits, and comments that it is found in the al-Shām region and is a hot and wet drug that is beneficial for the stomach.<sup>1152</sup> He discusses the resins produced from various species of the pistacia, and cites Dioscorides that the source of the resin is a tree that grows in Petra, Filastīn, and in the al-Shām region. Ibn al-Bayṭār details many medical uses for the resin.<sup>1153</sup> Maimonides writes in his entry that the resin of *Pistacia vera* or ‘butm’, is ‘a known resin in Egypt that is sold by the spice sellers.’<sup>1154</sup> Some sources describe the production of resin from the pistachio tree (apparently the *Pistacia palaestina*) which was also used for medical purposes. al-Nuwayrī cites early sources and writes that pistachio gum is the resin of a tree that has a green seed and is imported from cities of ‘the Maghreb and of Falastīn, Syria, and nearby locations.’<sup>1155</sup> He also maintains that ‘fistak’ is a component in a medication to strengthen sexual desire. Another component in the same medication is the seed of

<sup>1148</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>1149</sup> Assaph, IV, 400.

<sup>1150</sup> Donolo, pp. 16–18. See the editor’s notes, pp. 72–73.

<sup>1151</sup> al-Kindī, p. 30; al-Rāzī, vol. 21, p. 214.

<sup>1152</sup> Ibn al-Baytar, al-Jami, III, p. 162; Leclerc, no. 1681.

<sup>1153</sup> Ibn al-Baytar, al-Jami, III, pp. 131–132; Leclerc, no. 1581. Cf. the entry ‘Batam’ in al-Antaki, p. 249, and also Ibn Sina, p. 396.

<sup>1154</sup> Maimonides, Glossaire, no. 301.

<sup>1155</sup> al-Nuwayri, XI, p. 297.

*Pistacia atlantica*. Crushed ‘fustuq’ was a component in a syrup to regulate bowel activity, and the oil of the ‘fistak’ was a component in a compound to strengthen the heart, the senses, and virility, and against aging. ‘Fustuq’ is a purgative listed among the hot and dry drugs. The resin of pistachio was a component in a ‘medicine to strengthen the male sexual organ and to constrict the glans.’<sup>1156</sup>

**TM:** The seed, which is used as food, contains 60% fat and is a condiment as well as being used to make halva.<sup>1157</sup> In Iraq and Iran the resin of Asian species of the pistachio was used to season food and fruits—for eating and for relieving stomach pains. The resin of *Pistacia terebinthus* was a chewing gum and served to cure cancerous growths.<sup>1158</sup> The resin of *Pistacia vera* is commonly used as medicine to the present day in Aleppo (Syria) and in surrounding areas.<sup>1159</sup>

## Plantain

Ribwort, *Plantago afra* (Plantaginaceae), **A:** **dūfus, bizra qatūnā**, Great Plantain *Plantago major*, **A:** **lisān al-ḥamal**<sup>1160</sup>

**Description, identification and history:** The genus comprises 260 species. The Babylonians made use of the plant to treat swellings in the feet and eyes. Dioscorides describes the *Psullion* and lists its uses, such as: treating malaria, the stings of bees and scorpions, snakebite, headaches and earaches, and stomach ulcers.<sup>1161</sup> Today, a few species, mainly *Plantago ovata* and *Plantago afra*, are grown as cultivated plants, and they serve as medicinal plants as well as for industrial purposes.<sup>1162</sup>

**PU:** Seeds of clammy plantain figure in 4 lists of *materia medica* (T-S Ar.39.451; T-S AS 179.56; T-S AS 145.365; T-S Ar.30.274), and in 2 prescription: one for cough (T-S 8J15.20) and one for unknown uses (T-S Ar.30.305).

**TU:** Plantain is mentioned in medical books in recipes for the treatment of children with umbilical hernia and incessant crying (T-S Ar.40.160),

<sup>1156</sup> Maimonides, Regimen, 1:13; 2: 9, 11; Maimonides, Aphorisms, 13:44, 50; 21: 69; Maimonides, Sexual, 8:6.

<sup>1157</sup> Plants & Animals, XII, p. 141; Uphof, p. 413.

<sup>1158</sup> Hooper, pp. 152–153.

<sup>1159</sup> Sanagustin, p. 88, no. 171.

<sup>1160</sup> Identification of plants is according to Maimonides, Glossaire, nos. 52, 213; al-Antaki, p. 159; Issa, p. 143, no. 4; Dinsmore & Dalman, nos.1433, 1449.

<sup>1161</sup> Dioscorides, IV.70.

<sup>1162</sup> Plants & Animals, XI, p. 110.

treatment for splitting and falling hair (ointment to be used on shaved head; T-S NS 222.28r), jaundice with acute fever and palpitation (T-S NS 305.116). Plantain seeds were used with apple vinegar and old cheese as an antidote for diarrhoea with blood (T-S Ar.40.155) and roasted ones to strengthen the stomach and stopping diarrhoea resulting from weakness of the liver (T-S Ar.40.51). It is also mentioned in a lexicon of *materia medica* (T-S Ar.39.184) and in recipes for unknown uses (T-S AS 182.258r; T-S AS 162.132) one of which begins with the basmalah (T-S Ar.42.110r).<sup>1163</sup>

**OMU:** The physician Assaf describes clammy plantain and lists among its medical uses relief of pains and symptoms of women's diseases, and treatment of kidney stones and eye diseases.<sup>1164</sup> al-Kindī presents the extensive use of various species of fleawort.<sup>1165</sup> The seeds of clammy plantain served among other things as a component in a medication against cough and as a medicine for rinsing the mouth and treating back pains and rheumatism.<sup>1166</sup> In a letter to the Vizier al-Fāḍil in response to a medical problem, Maimonides recommends not adding clammy plantain seeds to the drink that was called 'heart-gladdening' because it also served as a component in a medication to 'eliminate desire for coitus'. Dāwud al-Anṭākī, describes medical uses of clammy plantain such as increasing fertility in women, increasing virility, curing infection in the large intestine, treating oedema, and hair growth. The plant was a hot and dry drug.<sup>1167</sup>

**TM:** TM used the leaves of the plantain species to treat vesicles in the legs, to knit bones, to eliminate skin parasites, to prevent contamination and infection in wounds, to cure burns and stings by living creatures, and to soothe the eyes.<sup>1168</sup> Great plantain served in the region of the Levant to treat haemorrhages and haemorrhoids, as a diuretic, as a medication for headaches, to improve eyesight, and for tuberculosis, kidney disease, and pain relief.<sup>1169</sup> Clammy plantain is used by the Bedouin in

<sup>1163</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1164</sup> Assaph, IV, 405.

<sup>1165</sup> See, for example, al-Kindi. p. 296, no. 176.

<sup>1166</sup> al-Kindi, nos. 15, 116, 138. In detail *ibid.*, p. 317, no. 236.

<sup>1167</sup> al-Anṭākī, p. 159. Cf. Ibn al-Baytar, al-Jami, IV, p. 108; Leclerc no. 2022; al-Biruni I, p. 292; Ibn Sina, p. 353.

<sup>1168</sup> Plants & Animals, XI, p. 109; Uphof, p. 415; Grieve, pp. 640–645; al-Rawi & Chaakravarty, pp. 74–75; Morton, pp. 325–328.

<sup>1169</sup> Dafni, Edible, p. 75; Plants & Animals, XII, p. 88; al-Rawi & Chaakravarty, p. 75, with content of substances.

the Negev to disinfect and to cure diseases of the skin and intestines. In France the plant is grown for curative purposes.<sup>1170</sup>

## Plum

*Prunus domestica* (Rosaceae),<sup>1171</sup> **A:** 'ijjās, 'ayn al-baqar, 'injās<sup>1172</sup>

**D&H:** The plum tree is a deciduous fruit tree, relatively large, with a hardwood trunk and white flowers. Its dark coloured fruit is round and in some species elongated. When ripe, the skin softens and the fruit becomes sweet, juicy, and fragrant.<sup>1173</sup> Identification of the plum in medieval sources is complicated because of the large number of species and the alternative names given to similar varieties, such as peach, pear, apricot, and bear's plum.<sup>1174</sup> According to these and other sources, it appears that the plum was called 'ijjās' or 'injās' in Arabic.<sup>1175</sup> Growing in the Levant is a wild variety called *Prunus ursina* (bear plum). In the course of time, certain wild varieties were cultivated and others were introduced into the region by the Greeks and the Romans.<sup>1176</sup> The Jewish Sages mention the plum by various names: 'dormaskana' 'ahon', 'ahonia', 'paga'in.<sup>1177</sup> According to Jewish sources, the plum also served as a remedy. In Greece and Rome the plum, *Kokkumelia*, was used for medicinal purposes, and physicians such as Dioscorides praised it for its efficiency in the digestive system, for restraining intestinal activity and preventing diarrhoea.<sup>1178</sup>

**PU:** Plums figure in 7 lists of *materia medica* (T-S Ar.35.366; T-S Ar.35.366; T-S AS 179.132; T-S AS 179.80; T-S AS 184.234; T-S NS 279.57; *sharāb*, T-S AS 179.56) and in 10 prescriptions: for fever (T-S AS 155.277), haemorrhoids (T-S Ar.40.53), muscles pain (T-S NS 108.139), and as an aphrodisiac (T-S NS 164.159). It is also mentioned in prescrip-

<sup>1170</sup> Abu-Rabia, p. 17; Chopra et al., pp. 47–48, with content of active substances.

<sup>1171</sup> Issa, p. 149, no. 1.

<sup>1172</sup> Maimonides, Glossaire, p. 19, no. 13; al-Antaki, p. 38; al-Biruni, I, p. 24; al-Ghafiqi, no. 10; Issa, p. 149, no. 1; Dinsmore & Dalman, no. 660.

<sup>1173</sup> Plants & Animals, XII, p. 111.

<sup>1174</sup> Discussion in Amar, Production, pp. 282–285.

<sup>1175</sup> Ibid., p. 284; Leclerc, nos. 1269, 1615; Amar, Ibn al-Baytar, p. 75, n. 74.

<sup>1176</sup> Goor, Fruits, p. 259.

<sup>1177</sup> Feliks, Fruit Trees, pp. 234–238; Goor, Fruits, pp. 264–265; Low, III, pp. 163–169.

<sup>1178</sup> For example: Dioscorides, I.174.

tions for unknown uses (T-S Ar.40.141; T-S Ar.42.15 [2]; T-S Ar.34.150; T-S NS 305.76; T-S NS 327.97; *sharāb*, T-S Ar.34.217 [2]).

**TU:** Plums are mentioned in general medical books (T-S Ar.11.15; T-S Ar.39.91; T-S Ar.40.50; T-S Ar.40.66; T-S Ar.40.111; T-S Ar.42.167; T-S Ar.44.101; T-S Ar.44.148; T-S Ar.44.149; T-S Ar.45.4; T-S AS 178.122) and books on ophthalmology (T-S Ar.42.144; T-S Ar.44.13), dermatology (T-S Ar.43.114; T-S NS 90.66), *materia medica* (T-S Ar.39.467; T-S Ar.43.132; T-S Ar.44.12; T-S Ar.44.60; T-S Ar.44.204), pharmacopoeias (T-S Ar.40.91; T-S Ar.40.130; T-S AS 177.144), in a recipe for stomach ailments and colic (T-S Ar.45.28), and in other fragments (T-S AS 180.32; T-S NS 297.39).<sup>1179</sup>

**OMU:** al-Kindī report the use of °ijjāš' as a general medicine<sup>1180</sup> while Maimonides notes that plums are constricting fruits and a mild form of medication.<sup>1181</sup> In his entry °ijjāš' Ibn al-Bayṭār indicates its medicinal uses: as a cold and moist drug, a cathartic, and a regulator of bowel activity.<sup>1182</sup> The resin gum of the plum tree was used to suture wounds and abscesses, dissolve kidney stones, cure skin diseases, aid in improving the lungs and treat cough, smallpox and skin diseases.<sup>1183</sup> al-Qazwīnī lists different medicinal uses, including preventing gum bleeding, relief of thirst, and stabilizing the temperature of the heart.<sup>1184</sup> Dāwud al-Anṭākī also enumerates the medicinal uses of the plum, such as relieving thirst, headache, throat pains, nausea and vomiting, opening blockages and drying wounds. The leaves were used to eliminate worms.<sup>1185</sup>

**TM:** The fruit is eaten raw, dried, or as a preserve. In Iraq and Iran the dried fruit (prune) is used in cooking and to clean metal.<sup>1186</sup> The Jews of Iraq used the plum extensively, especially for medicinal purposes to treat the kidneys, various kinds of skin diseases, pneumonia, and sexual diseases, and also to lower fever.<sup>1187</sup> In Europe the plum fruit serves as a cathartic, and the oil produced from the flower buds is used in TM, especially in Hungary.<sup>1188</sup>

<sup>1179</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1180</sup> al-Kindī, nos. 211, 214.

<sup>1181</sup> Maimonides, Regimen, 1:13; 2:7.

<sup>1182</sup> Ibn al-Baytar, al-Jami, I, pp. 13–14; Leclerc, no. 21; al-Ghafiqi, no. 10.

<sup>1183</sup> Ibn al-Baytar, al-Jami, III, p. 86; Leclerc, no. 1409.

<sup>1184</sup> al-Qazwini, p. 217.

<sup>1185</sup> al-Anṭākī, pp. 38–39. On medicinal uses cf. Ibn al-Baytar, al-Jami, I, pp. 13–14; Leclerc, no. 21.

<sup>1186</sup> Uphof, p. 430; Hooper, p. 158.

<sup>1187</sup> Collected references in Ben-Yakov, p. 758.

<sup>1188</sup> Grieve, p. 659.



**TAI:** al-Muqaddasi includes ‘injāṣ al-kāfūrī’ among the special crops in the region of Filasṭīn (Palestine).<sup>1189</sup> In a trading document of 1065 CE ‘injāṣ’ is mentioned among the products purchased in Tyre.<sup>1190</sup> Ibn Wahshiyya relates that the plum tree is widespread in the Levant and also in the area between al-Shām and the desert of Paran.<sup>1191</sup> The aforementioned wild plum variety, bear plum, is mentioned by al-Baghdādī during the Ayyubid period. According to him, the plum was a fruit widely grown in Syria for use as food.<sup>1192</sup> During the Mamluk period, ‘ijjāṣ’ was included among the agricultural products of the Levant and was traded as merchandise.<sup>1193</sup> Ibn al-Bayṭār in his entry ‘ijjāṣ’ describes the Syrian variety ‘al-shāmi’, especially ‘what is found of it in Damascus.’<sup>1194</sup>

## Polypody

*Polypodium vulgare* (Polypodiaceae), **A:** **basbāyaj, basfāyaj**<sup>1195</sup>

**D&H:** Delicate perennial fern (30 cm), with slender knotty rhizomes and curving fronds that are dotted with brown spores on their lower surface.<sup>1196</sup> The scientific name indicates the many shoots of the root stem.<sup>1197</sup> Dioscorides reports the use of the *Pteris*, identified with the *Aspidium aculeatum*, to eliminate worms. *Polypodion*, identified with the simple lonchitis (*Polypodium cambricum*), served as a purgative, eliminated phlegm, and increased sweating.<sup>1198</sup>

**PU:** Polypody figures in 9 prescriptions: for hallucination (T-S 16.291) and for unknown uses (T-S Ar.40.141; T-S AS 155.365; T-S NS 305.75(76); T-S NS 327.97; T-S Or.1081.J.39; T-S 13J6.14; T-S 12.33). It is also mentioned in an alchemical astrological preparation (T-S 8J14.3).

**TU:** Polypody is mentioned in medical books in recipes for unknown uses (T-S NS 90.51v; T-S AS 183.216r), one of which (two potions) was

<sup>1189</sup> al-Muqaddasi, p. 181.

<sup>1190</sup> Gil, III, p. 253, doc. no. 503.

<sup>1191</sup> Ibn Wahshiya, I, p. 644.

<sup>1192</sup> al-Baghdadi, p. 76.

<sup>1193</sup> For example, al-Qalqashandi, p. 87. In detail Amar, Production, p. 285.

<sup>1194</sup> Ibn al-Baytar, al-Jami, I, pp. 13–14; Leclerc, no. 21; Amar, Ibn al-Baytar, p. 75, n. 74.

<sup>1195</sup> Leclerc, nos. 387, 416, 442, 1203, 1891; Issa, p. 24, no. 14; Maimonides, Glossaire, no. 65.

<sup>1196</sup> Chevallier, p. 252.

<sup>1197</sup> Plants & Animals, IX, p. 225.

<sup>1198</sup> Dioscorides, IV.186, 188.

attributed to Galen and Archigenes (T-S NS 306.54), and in *lexica of materia medica* (T-S AS 157.209; T-S AS 160.197).<sup>1199</sup>

**OMU:** According to the physician Assaph, the polypody is a rock plant with many leaves, and its roots cleanse the intestines, the liver, and the spleen, and reduce swellings.<sup>1200</sup> According to al-Kindī, polypody is a component in medications and ointments to treat the teeth.<sup>1201</sup> Maimonides states that the plant is used to treat the liver by causing diarrhoea and urine flow, and also that it is a component in a general syrup to purify the blood and the gall bladder, and a component in a medication against asthma.<sup>1202</sup> Ibn al-Bayṭār notes medical uses such as causing diarrhoea and reducing swellings.<sup>1203</sup> According to Saladino d'Ascoli, the plant is a hot and dry drug.<sup>1204</sup> The lonchitis (*Aspidium [Polypodium] lonchitis*) is described by Ibn al-Bayṭār, who lists its uses by the classical physicians. According to him, the plant grows in the mountains of Lebanon, near the city of Sidon, and in the mountains of Syria.<sup>1205</sup>

**TM:** The resin of the fern is used in the liqueur industry. The leaves and root stems of polypody serve as a strengthening medicine, a stimulant, a remedy for problems of the chest, and an expectorant. It is usually used to treat cough and chest problems, to encourage the appetite, and to cure skin diseases. The resin also serves to destroy worms.<sup>1206</sup> Other species of the polypody serve in South America to reduce fever, to increase sweating and urination, to cure cough, to treat headaches and chest pains, and to cause diarrhoea.<sup>1207</sup> In Iraq and Iran the root stem of the polypody serves as a purgative, a strengthening medicine, and a medicine to treat digestive problems and rheumatic pains.<sup>1208</sup>

<sup>1199</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1200</sup> Assaph, IV, 417–418.

<sup>1201</sup> al-Kindī, nos. 74, 214.

<sup>1202</sup> Maimonides, Aphorisms, 9:70; 21:80; Maimonides, Regimen, 3:9; Maimonides, Asthma, 12:5. The editor identified it with the simple lonchitis.

<sup>1203</sup> Ibn al-Baytar, al-Jami, I, pp. 92–93; Leclerc, no. 280. Cf. Ibn Sina, p. 276.

<sup>1204</sup> Saladino, p. 86.

<sup>1205</sup> Ibn al-Baytar, al-Jami, IV, p. 110; Leclerc, no. 2038.

<sup>1206</sup> Uphof, p. 423.

<sup>1207</sup> Ibid., pp. 422–423.

<sup>1208</sup> Hooper, p. 156.

## Pomegranate

*Punica granatum* (Punicaceae), **A: rummān, jullanār (flowers)**<sup>1209</sup>

**D&H:** The pomegranate is one of the species for which the Land of Israel is renowned (Deuteronomy 8:8) and is included among the fruits that the spies brought back with them to prove the fertility of the land (Numbers 13:13). During the period of the Mishna and Talmud it was listed among the important crops of the Land of Israel, as testified in rabbinical sources, place names, and its appearance in works of art and architecture.<sup>1210</sup> In ancient Babylonian culture pomegranate flowers were used, among other things, to cure the stomach, ears, eyes, and chest, and to destroy worms.<sup>1211</sup> Even Dioscorides maintained that *Rhoa* was beneficial for the stomach and cured diarrhoea, dysentery, mouth sores and vaginal sores, and earaches.<sup>1212</sup> The pomegranate has folkloristic and mystic associations that find expression to this day. An example is the widespread belief among the Arabs that in every pomegranate there exists one seed from the Garden of Eden. This belief is one of the reasons for giving pomegranate juice to the sick, to children, and even to babies.<sup>1213</sup>

**PU:** Different products of pomegranate figure in 7 lists of *materia medica* (T-S Ar.35.229; T-S NS 164.12; T-S NS 321.49; T-S AS 177.200; flowers, T-S Ar.39.450; T-S NS 305.69; T-S Ar.35.366) and in 9 prescriptions: for soap tablet (flowers, peel, T-S Ar.42.20 [2]); urinary complaints (seeds, T-S AS 152.90) and in a medical diet (T-S Ar.39.244). It is also mentioned in prescriptions for unknown uses (T-S Ar.42.152; T-S AS 177.402; flowers, T-S Ar.39.211; T-S Ar.39.451; T-S Ar.42.152; T-S AS 148.27).

**TU:** Pomegranate products are mentioned in medical books in a preparation of syrup (copied, according to Isaacs, from the beginning of chapter 5 in the hospital pharmacopoeia of Dāwud Ibn Abī al-Bayān; T-S Ar.39.91), and in a fragment dealing with action and uses of fruits such as apricot, apple, and of honey (includes a quotation from Hippocrates' Epidemics; T-S Ar.43.225). Oil of pomegranate flower and pure water are recommended for cleansing the eyes (T-S AS 180.6). Pomegranate

<sup>1209</sup> Maimonides, Glossaire, nos. 75, 243, 324; Issa, p. 151, no. 3.

<sup>1210</sup> Low, III, pp. 80–113; Feliks, World, 48–51. See a general survey of the pomegranate and its references in the sources in Goor, Fruits, pp. 85–98.

<sup>1211</sup> Levey, Chemistry, pp. 51, 73, 108, 112.

<sup>1212</sup> Dioscorides, I.151.

<sup>1213</sup> Crowfoot & Baldensperger, p. 111.

blossom is one of the simples mentioned in a recipe (begins with the basmalah followed by al-shāfi—the only healer; T-S Ar.42.152v). It also served as a simple in a gargling and rinsing solution for the treatment of inflammatory conditions of the tongue and gums (caused by losses of teeth; T-S Ar.40.119) and loss of teeth (T-S NS 306.73) as well as in a lexicon of *materia medica* (T-S AS 183.159). Pomegranate juice is recommended in a recipe for the management of diarrhoea (T-S Ar.41.104) in a tabulated work on medicine which includes general management of fevers, hectic and septic fevers, cancer, erysipelas, soft and hard inflammatory swellings and elephantiasis (T-S Ar.41.137r), and in a pharmacopoeia regarding its mucilage (T-S AS 177.343). Pomegranate peels are mentioned in a recipe for unknown uses (T-S AS 179.26), and pomegranate seeds in a lexicon of *materia medica* (T-S Ar.35.229; Or. 1081.J.60). Sour pomegranate is a simple in a recipe for the treatment of obstruction, wind, diarrhoea, pleurisy and trembling (T-S AS 179.110) and sweet pomegranate is recommended for phlegm, liver complaints, and nerves (T-S AS 179.274).<sup>1214</sup>

**OMU:** al-Kindī describes the extensive use of the pomegranate flowers to prepare bandages for the stomach and the liver, to ease spleen pains and scabies, to strengthen the limbs, to treat throat pains, ulcers, and decay in teeth and gums.<sup>1215</sup> The Jewish physician Dāwud Ibn Abī al-Bayān, who lived in the Ayyubid period, mentions the use of the ‘ḥabb rummān al-shāmī’ to slake thirst, to cure stomach aches, and to treat liver diseases.<sup>1216</sup> During the Mamluk period the pomegranate is mentioned in the list of fruits of the Land of Israel. From the peeled and dried fruit an appetizing food was prepared called ‘ḥabb rummān.’<sup>1217</sup> Maimonides describes the use of the pomegranate peel to heal wounds, to stop diarrhoea and as well as to cause it, and to prepare a refreshing drink. Sour pomegranate and wild pomegranate are considered cold and dry drugs, while the pomegranate (the reference is probably to sweet pomegranate)

<sup>1214</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>1215</sup> al-Kindī, nos. 36, 38, 42, 55, 59, 77, 86, 91, 102, 211. Cf. al-Qazwini, pp. 290–291; Ibn Sina, p. 284; al-Ghafiqi, no. 194.

<sup>1216</sup> Ibn al-Bayan, p. 42.

<sup>1217</sup> Suriano, p. 223.

is considered a hot and dry drug.<sup>1218</sup> Ibn al-Bayṭār describes the use of sweet and sour pomegranates for curative purposes.<sup>1219</sup>

**TM:** The Bedouins in Sinai use the pomegranate to stop diarrhoea.<sup>1220</sup> Yemenite Jews made similar use of the fruit, and also used it to soothe stomach pains and to treat the eyes. The dried and crushed peel of the fruit was used to cure burns, to dye and to strengthen the hair, and to prevent dandruff.<sup>1221</sup> In Iran and Iraq also the pomegranate flowers and fruit were used to stop diarrhoea and to treat stomach problems and dysentery. The root peel was used to eliminate intestinal worms by means of an active substance in it, the alkaloid pelletierine. The powder made from the flowers served as a component in a medication for gum pains.<sup>1222</sup> The bark of the tree served to destroy worms and to treat chronic malaria, diarrhoea, excessive sweating, etc. The bark contains the alkaloids granatonine and pelletierine.<sup>1223</sup> In Egypt as well the flowers were used to treat constipation.<sup>1224</sup>

**TAI:** During the Middle Ages, especially after the Mamluk period, many sources (Muslim and Christian) attest to the pomegranate as an important agricultural crop throughout the Levant, and for which tax was paid. The written testimonies are also reflected in archaeological finds from that period.<sup>1225</sup> The pomegranate is frequently mentioned in Jewish sources of that period, including evidence on trade and export found in the Genizah.<sup>1226</sup>

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<sup>1218</sup> Maimonides, Aphorisms, 15:56; 20:76; 21:73, 78, 80; Maimonides, Regimen, 3:2; 4:11, 14.

<sup>1219</sup> Ibn al-Baytar, al-Jami, II, pp. 142–143; Leclerc, no. 1058, and also 520, 2144. Cf. al-Antaki, pp. 169–170; Ibn Sina, p. 431.

<sup>1220</sup> Levey, Beduins, p. 83.

<sup>1221</sup> Reiani, no. 101. Cf. Jews of Iraq references in Ben-Yakov, p. 755.

<sup>1222</sup> Hooper, p. 160; al-Rawi & Chaakravarty, p. 79, with content of active substances.

<sup>1223</sup> Uphof, p. 436.

<sup>1224</sup> Ducros, p. 65.

<sup>1225</sup> Detailed sources in Amar, Production, p. 274; Goor, Fruits, pp. 95–99.

<sup>1226</sup> Goitein, Society, I, p. 151, IV, p. 441; Amar, Pomegranate.

## Potash

Potash, Soda, Glasswort, Barilla ( $K_2CO_3$ ;  $Na_2CO_3$ ), **A:** 'ushnān, ghāsūl, qily<sup>1227</sup>

**D&H:** Pulverized ashes of alkaloid plants (*Salsola kali*, *Zygophyllum album*, *Salicornia fruticosa*, *Mesembryanthemum cristallinum*). The ash of the various salty plants produced by slow burning<sup>1228</sup> contains different alkali substances such as sodium, potassium carbonate ( $K_2CO_3$ ; potash), and sodium carbonate ( $Na_2CO_3$ ; soda). This ash was already in use in the Near East in early times and in the Middle Ages for washing, laundry, and medical purposes.<sup>1229</sup> The main plant from which the substance was produced was the *Salsola kali* (Chenopodiaceae), an annual.<sup>1230</sup> In the second millennium BCE the Hittites made use of the plant's ashes for cleaning purposes. Later the Babylonians also mention this use.<sup>1231</sup> In India soda was in use for a long period of time to treat mumps. In Mesopotamia and in India soda originated from the ash of seashore and salt marsh plants. Its origin in Egypt was the ash of plants and minerals from the ground.<sup>1232</sup> The Bible mentions the terms 'borit' (Jeremiah 2:22), 'bor' and 'sheleg' (Job 9:30) in connection with cleaning and laundry.<sup>1233</sup> Dioscorides reports on the use of soda (*Aloe anthos*) to cure ulcers, ear problems, and eyesight difficulties, and to remove scars.<sup>1234</sup> The Sages mention a few cleaning substances, including 'borit' (Bab. Talmud, Shabbat, 90a).

**PU:** Potash figures in 3 lists of *materia medica* (T-S Ar.35.388; T-S Ar.43.317 [2]; T-S NS 164.12) and in 3 prescriptions: for dental problems (T-S AS 182.77) and for unknown uses (T-S NS 265.62; T-S NS 327.40), one of which is an alchemical astrological preparation (T-S 8J14.3).

**TU:** Potash is mentioned in medical books (T-S Ar.41.133), in recipes for unknown uses (T-S AS 176.83), in some books of *materia medica* (T-S Ar.44.129; T-S AS 179.329), quasi-medicine (T-S Ar.44.4; T-S NS

<sup>1227</sup> Maimonides, Glossaire, nos. 24, 345. Cf. al-Kindi, p. 291, no. 164; Leclerc, no. 1279.

<sup>1228</sup> Issa, p. 22, no. 15; p. 161, no. 6.

<sup>1229</sup> al-Kindi, p. 231, no. 13; *El*, p. 107.

<sup>1230</sup> Plants & Animals, X, p. 65.

<sup>1231</sup> Levey, Chemistry, p. 121.

<sup>1232</sup> al-Kindi, p. 231.

<sup>1233</sup> Commentary, identification, and additional sources are in Feliks, World, pp. 298–299.

<sup>1234</sup> Dioscorides, V.129.

31.6; T-S 20.20), and in other fragments (T-S Ar.43.312; T-S NS 90.46; T-S NS 228.14; T-S Or.1080.14.6).<sup>1235</sup>

**OMU:** al-Kindī notes the use of the potash to cure haemorrhoids and for an enema.<sup>1236</sup> Al-Tamīmī states that potash is used for the treatment of dental problems and external abscess.<sup>1237</sup> al-Bīrūnī describes the toxicity of the substance and notes its use in causing miscarriage and even death.<sup>1238</sup> Maimonides recommends the use of the potash in a concoction meant to repel lustful women. Elsewhere he says that the substance combined with slaked lime and arsenic serves to remove hair from the body.<sup>1239</sup> He also maintains that it is one of the components of a compress applied after a sting or bite. Green potash is listed among the components of the dressing placed over the area of a scorpion sting.<sup>1240</sup> al-Ghāfiqī cites sources describing the use of potash for washing clothes and for curative purposes.<sup>1241</sup> Ibn al-Bayṭār describes its medical uses according to contemporary physicians. This plant is defined as a hot drug, and among its main uses are opening obstructions, inducing urine, and accelerating menstruation.<sup>1242</sup> Additional uses according to various Arab physicians were treating skin diseases, wounds, and cuts.<sup>1243</sup> Al-Qazwīnī cites Ibn Sīnā who states that it is a cleaning substance. Small doses accelerated urination, a medium dose caused miscarriage, and an exaggerated dose death.<sup>1244</sup> al-Qazwīnī describes the production of the substance from the burnt plant and its uses for cleaning. Its medical uses are cleaning white spots on the body, curing blemishes, and eliminating extraneous cells. ‘Qalī’ is a component in an external medication to relieve the pains of scorpion stings.<sup>1245</sup>

**TM:** The Jews of Iraq used potash for various medical needs, for example, to wash the hands, to rinse sexual organs because of irritation, to reduce extraneous flesh glands from the skin, to cure and eliminate tooth worms, and as an external preparation to cure bunions.<sup>1246</sup> In Iran and Iraq the substance was produced from salt marsh and seashore

<sup>1235</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>1236</sup> al-Kindi, nos. 19, 149, 215.

<sup>1237</sup> Amar & Seri, pp. 111–113.

<sup>1238</sup> al-Biruni, II, p. 52.

<sup>1239</sup> Maimonides, *Sexual*, 5:1, 3; 16:1.

<sup>1240</sup> Maimonides, *Poisons*, pp. 102, 119.

<sup>1241</sup> al-Ghafiqi, no. 76.

<sup>1242</sup> Ibn al-Baytar, *al-Jami*, I, pp. 37–38; Leclerc, no. 87. Cf. al-Antaki, p. 47.

<sup>1243</sup> *EI*, V, p. 107.

<sup>1244</sup> al-Qazwini, p. 239.

<sup>1245</sup> *Ibid.*, p. 204.

<sup>1246</sup> Ben-Yakov, pp. 211, 348, 377, 593.

plants, and was used for medical purposes.<sup>1247</sup> The juice of the salsola plant was considered in the Middle East as a drug to stimulate urine and a medicine against worms.<sup>1248</sup> In the past potassium was imported from North Africa and southern Europe, and served mainly as a diuretic.<sup>1249</sup>

**TAI:** The Jerusalem geographer al-Muqaddasī notes in his description of the al-Shām region that the city of Aleppo was the centre for the production and export of soap.<sup>1250</sup> His contemporary, the Jerusalemite physician al-Tamīmī, describes in detail the production of potash in the Middle East and its export from Amman to Jerusalem and other destinations.<sup>1251</sup> In Temple Mount documents ‘qily’ appears in a list of medicinal substances sold by the ‘aṭṭārūn’ (medicine sellers) in the markets of Jerusalem during the Mamluk period.<sup>1252</sup> Kali was also an important component in the soap industry in Jerusalem in the 16th century,<sup>1253</sup> and it was exported from the Levant to Europe for other industrial products.<sup>1254</sup> Potash was traded, according to merchants’ letters from the Genizah, in Alexandria, Cairo, and Tunis.<sup>1255</sup> It was used for washing hands and body, was kept in ‘ushnān’ (box) made out of brass, silver, etc.<sup>1256</sup>

## Purslane

*Portulaca oleracea* (Portulacaceae), **A: rijl, baqla ḥamqā**<sup>1257</sup>

**D&H:** Common or garden purslane is an annual herbaceous plant listed among the most commonly found plants in the world. Its leaves are fleshy and juicy, its flowers are small and yellow, and the fruit is in the form of small capsules (1 cm.) with a lid and they contain tiny seeds.<sup>1258</sup> Dioscorides describes the use of the plant *Andrachne* to treat stomach

<sup>1247</sup> Hooper, p. 193.

<sup>1248</sup> Dafni, *Edible*, p. 82.

<sup>1249</sup> Grieve, pp. 357–358.

<sup>1250</sup> al-Muqaddasī, p. 180; *PPTS*, III, 70.

<sup>1251</sup> Amar & Seri, p. 63.

<sup>1252</sup> Lutfi, p. 292.

<sup>1253</sup> Cohen, *Economy*, p. 81; Cohen, 18 century, pp. 230–231, no. 245; Rauwolf, pp. 37–38; Volney, p. 299, 314.

<sup>1254</sup> Ashtor & Cervidalli.

<sup>1255</sup> Gil, *Kingdom*, II, p. 787, no. 263, III, p. 477, no. 444, p. 543, no. 543.

<sup>1256</sup> Goitein, *Society*, IV, pp. 140–141.

<sup>1257</sup> Maimonides, *Glossaire*, p. 29, no. 59; Issa, p. 147, no. 10; Amar, *Production*, p. 272. Dinsmore & Dalman, no. 306.

<sup>1258</sup> *Plants & Animals*, X, pp. 47–48.



problems.<sup>1259</sup> Other classical physicians such as Hippocrates, Theophrastus, Pliny, and Galen report its use to treat diseases of the digestive tract as well as external wounds and burns. The plant was apparently cultivated in Europe and used for food.<sup>1260</sup> The source for the Hebrew name is the Mishna, where it is also called 'ḥalaglogot'; and in the Talmud it is termed 'farfaḥina.' These names are identified with 'raglat ha-gina' (purslane).<sup>1261</sup> The Arabic name repeats the one used by the Jewish Sages. Medieval commentators identify the plant correctly and called it 'regel ha-orev' (raven's foot) and 'bizr rijla'.<sup>1262</sup>

**PU:** Purslane figures in 4 lists of *materia medica* (T-S NS 306.106; seeds, T-S AS 184.234; T-S NS 279.57; T-S NS 306.117) and in 7 prescriptions: for dressing bites (T-S NS 164.98) and for unknown uses (T-S Ar.42.110; seeds, T-S Ar.39.211; T-S Ar.42.110; T-S Ar.43.338; T-S AS 152.34; T-S NS 327.40).

**TU:** Purslane is mentioned in a medical book in an prescription for the treatment of eye complaints such as lippitude, inversion, and lice of the eyelids. Besides purslane the prescription contains water simples as litharge, saffron, endive water, and water of lavender (T-S AS 179.235). Purslane also appears in a tabulated work on medicine which covers general management of fevers, hectic and septic fevers, cancer, erysipelas, soft and hard inflammatory swellings, and elephantiasis (T-S Ar.41.137). In another fragment the use of purslane is mentioned, citing Hippocrates, Dioscorides, and al-Jawharī (T-S Ar.42.104). Purslane features in a recipe for a dermatological potion (T-S NS 90.66). It is also mentioned in a lexicon of *materia medica* (T-S AS 182.183) and in prescriptions for the treatment of: jaundice with acute fever and palpitation (T-S NS 305.116). Purslane seeds are listed in otherlexica of *materia medica* (T-S NS 306.115; T-S AS 182.179) and in prescriptions for the treatment of diarrhoea (powder; T-S Ar.40.179r).<sup>1263</sup>

**OMU:** According to al-Kindī, the plant is a component in a medication to treat pustules on the lips, spitting blood, throat pains, and inflammation of the teeth and gums. The seeds are used for rinsing the mouth.<sup>1264</sup> According to Maimonides, the 'laglogot' are a mild and safe

<sup>1259</sup> Dioscorides, II.151.

<sup>1260</sup> Plants & Animals, X, p. 48.

<sup>1261</sup> Low, III, pp. 70–75; Feliks, Shevi'it, I, p. 383; II, p. 215.

<sup>1262</sup> Details are given in Amar, Production, no. 272.

<sup>1263</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1264</sup> al-Kindī, nos. 88–90, 116, 179, 214.

medication.<sup>1265</sup> He also reports that they are an external medication for erysipelas. He cites al-Tamīmī that the ‘laglogot’ stop the emission of blood from the intestines.<sup>1266</sup> Purslane also serves as a component in an internal medication to treat the stings of bees and wasps, and as a medication against poisons.<sup>1267</sup> In his entry ‘baqala ḥamqā’ Ibn al-Bayṭār describes the purslane plant and lists its medicinal uses, such as treatment of stomach problems, stones in the kidney and urinary tract, and causing diarrhoea.<sup>1268</sup>

**TAI:** According to Maimonides, ‘baqala yamāniyya’ was called ‘al-farfaḥīn’ in Syria.<sup>1269</sup> The purslane plant was listed among the typical agricultural crops in Greater Syria during the Mamluk period.<sup>1270</sup> Al-Badrī lists ‘al-baqala al-ḥamqā’ among the vegetables grown in Syria.<sup>1271</sup>

## Quince

*Cydonia oblonga* (Rosaceae), **A: safarjal**<sup>1272</sup>

**D&H:** Deciduous tree (8 m), with green-grey oval leaves, pink or white flowers, and pear-shaped sweet-smelling fruits.<sup>1273</sup> The quince was cultivated in Babylon 6,000 years ago and later became widespread in Mediterranean countries. The quince mentioned in the Mishna (Kil’ayim, 1:4) is identified with this quince. Dioscorides describes the use of quince to treat intestinal problems, dysentery, lung infections, and spleen infections. Quince wine was used for similar purposes.<sup>1274</sup> Quince is frequently mentioned in medieval Arabic literature, which refers to it as a common fruit for which the region of Syria was renowned.<sup>1275</sup>

**PU:** Quince products figure in 11 prescriptions: for eye complaints (seeds, T-S NS 218.21), swelling (T-S NS 194.70), cough (T-S 8J15.20), and for unknown uses (T-S Ar.30.305; T-S Ar.39.184; T-S Ar.42.110; T-S

<sup>1265</sup> Maimonides, Regimen, 2:10; Maimonides, Aphorisms, 20:47; Maimonides, Answers, no. 6; 19(3).

<sup>1266</sup> Maimonides, Aphorisms, 9:106; 20:84; 21:84.

<sup>1267</sup> Maimonides, Poisons, pp. 124, 150.

<sup>1268</sup> Ibn al-Baytar, al-Jami I, pp. 102–103; Leclerc, nos. 313, 1035, 1680. Cf. Ibn Sina, p. 275.

<sup>1269</sup> Maimonides, Glossaire, p. 29, no. 59.

<sup>1270</sup> al-‘Umari, p. 26; al-Qalqashandi, p. 87.

<sup>1271</sup> al-Badrī, p. 174.

<sup>1272</sup> Issa, p. 64, no. 5; Maimonides, Glossaire, no. 119.

<sup>1273</sup> Chevallier, p. 196.

<sup>1274</sup> Dioscorides, I.160; V.28.

<sup>1275</sup> Fischer; Amar, Production, pp. 147–148.

NS 306.41; T-S AS 151.56 [potion]; water, T-S AS 150.59 [potion]; ‘rubb’, T-S Ar.30.305 [2], seeds, T-S Ar.51.76).

**TU:** Quince is mentioned in medical books in recipes for strengthening the stomach and against diarrhoea resulting from weakness of the liver (T-S Ar.40.51) and against diarrhoea (T-S Ar.41.104), and in a preparation of syrup (copied, according to Isaacs, from the beginning of chapter 5 in the hospital pharmacopoeia of Dāwud Ibn Abī al-Bayān, cf. P. Sbath; T-S Ar.39.91). It also appears as a simple in lexica of *materia medica* (T-S Ar.40.152; T-S Ar.43.225; T-S AS 159.67), in lists of uses of fruits (T-S AS 177.144), and in recipes for unknown uses (T-S Ar.34.217; T-S AS 177.343), one of which is for preparing lozenges (T-S Ar.11.13r). Quince flower water features in a recipe for a potion (T-S AS 151.56v). Quince seeds are found in recipes for unknown uses (T-S Ar.51.76r) one of which begins with basmalah (T-S Ar.42.110r), and in a recipe for the treatment of sciatica, varicose veins, and venesection (T-S NS 306.172). Damascene Quince appears in a recipe for a potion (T-S AS 150.59).<sup>1276</sup>

**OMU:** According to al-Kindī, quince seeds are a component in a medication against cough and headaches.<sup>1277</sup> Shabbetai Donolo gives an account of various kinds of the well known balsams as described by Pliny, including ‘quince balsam.’<sup>1278</sup> al-Bīrūnī mentions quince in his medical treatise, and states that the seeds of the fruit when ripened are used to regulate the stomach and that they are ‘found in abundance in the mountains of the al-Shām region.’<sup>1279</sup> Quince was a drink or a jam produced from the fruit or its seeds.<sup>1280</sup> Maimonides notes that eating the fruits helps to treat headaches, and that the oil produced from it serves as a component in medications against abscesses in the liver. The cooked fruit eaten after a meal constricts the stomach.<sup>1281</sup> al-Qazwīnī maintains that the ash of the tree serves as a substitute for zinc, the flowers strengthen the head and the heart, and even the fruit is highly beneficial. A quotation from Ibn Sīnā indicates that quince relieves thirst, strengthens the stomach,

<sup>1276</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>1277</sup> al-Kindi, nos. 116, 173.

<sup>1278</sup> Donolo, p. 12.

<sup>1279</sup> al-Biruni, I, p. 357.

<sup>1280</sup> Serapion, no. 431; Saladino, p. 54.

<sup>1281</sup> Maimonides, Aphorisms, 9:21; 10:126; Maimonides, Regimen, 1:13; 2:14; Maimonides, Answers, 12:9.

and is a cooked food that eases the pain in the breasts of nursing women and reduces swellings.<sup>1282</sup>

**TM:** In Europe the fruit was used to produce a medication for strengthening, and to treat vomiting, and the seeds served to produce an ointment to treat skin diseases.<sup>1283</sup> In Iraq quince seeds were used as a strengthening drug that was refreshing and constricting, and to cure dysentery; a hair conditioner was made from it too. The fruits served as a constricting drug, to accelerate digestion, as a diuretic, and as a stimulant.<sup>1284</sup> Yemenite Jews used quince against cough, stomach pains, and intoxication, and to strengthen the body.<sup>1285</sup> The Jews of Iraq had many uses for the quince, including the curing of haemorrhoids, colds, cough, and eye diseases, to accelerate menstruation and improve the memory.<sup>1286</sup> In Egypt it was used as a medicine for the eyes, to cure haemorrhoids, and to lubricate the skin, and it was considered as a soothing and refreshing drug.<sup>1287</sup>

**TAI:** One of the sources of Ibn al-Bayṭār notes that ‘quince is one of the beneficial things found in the al-Shām region, and the best of them are found in the villages in the district of Aleppo.<sup>1288</sup> Quince is listed among the food products sold in Acre during the 12th century.<sup>1289</sup> In the Mamluk period quince appeared on the list of crops from the Land of Israel, mainly from the north of the country, and it was even exported to Egypt.<sup>1290</sup>

## Radish

*Raphanus sativus* (Brassicaceae), **A: fuḷ**<sup>1291</sup>

**D&H:** Radish is an ancient cultivated crop that was commonly found in ancient Egypt, Greece, and Rome, and even served for cultic purposes.

<sup>1282</sup> al-Qazwini, p. 225. Cf. Ibn al-Baytar, al-Jami, III, 17; Leclerc, no. 1192; al-Antaki, pp. 189–190.

<sup>1283</sup> Grieve, pp. 664–667; Uphof, p. 167.

<sup>1284</sup> al-Rawi & Chaakravarty, p. 34, with contents of active substances.

<sup>1285</sup> Reiani, no. 39.

<sup>1286</sup> Ben-Yakov, pp. 92, 120, 130, 138, 146, 152, 179.

<sup>1287</sup> Ducros, p. 26.

<sup>1288</sup> Degen, p. 148.

<sup>1289</sup> Ibn Jubayr, p. 314; Beugnot, II, 180, no. 35.

<sup>1290</sup> Qalqashandi, p. 87; Ibn Iyas, A/I, p. 41; IV, p. 102. Ya'ari, Travels, pp. 133, 136, 143; al-Dimashqi, p. 211; Lewis, p. 484; Ya'ari, Letters, p. 186.

<sup>1291</sup> Dinsmore & Dalman, no. 173, 175; Issa, p. 154, no. 2.

The source of the genus name is Greek meaning thick root. Radish is mentioned in the Mishna (e.g., Ma'aserot, 5:2) and in the Talmud (e.g., Bab. Talmud, Berakhot, 36b). The plant served as food, and 'radish oil' was produced from its seeds (Mishna, Shabbat, 2:2).<sup>1292</sup> In that period, it was also used for curative purposes.<sup>1293</sup> Dioscorides in his entry *Raphanis* notes that the plant is good for the stomach, sharpens the senses, is effective in treating cough, respiratory problems, eye diseases, snakebites, and mushroom poisoning, and also to accelerate menstruation.<sup>1294</sup>

**PU:** Radish figures in 5 lists of *materia medica* (T-S Ar.43.317; T-S Ar.35.327; T-S Ar.35.328; T-S Ar.35.82; seeds, T-S AS 181.193) and in 2 prescriptions: for snakebites (T-S NS 66.46) and treating lice (T-S Ar.43.54).

**TU:** Radish is mentioned in general medical books (T-S Ar.41.66; T-S Ar.42.175; T-S Ar.43.98; T-S Ar.43.265; T-S Ar.44.130; T-S NS 90.30) in prescriptions for mouth and throat diseases and skin diseases (T-S NS 327.90), for deafness, earache, and throbbing headache (T-S AS 180.135), and in books on ophthalmology (T-S Ar.41.40), fever (T-S Ar.44.57; T-S NS 222.31), dermatology (T-S NS 90.66), poison (T-S Ar.44.77), and *materia medica* (T-S Ar.40.49; T-S Ar.41.44; T-S Ar.42.73; T-S Ar.43.191; T-S Ar.44.204); in pharmacopoeias (T-S Ar.41.47; T-S Ar.41.114; T-S NS 305.58; T-S NS 305.107) and other fragments (T-S Ar.38.63; T-S Ar.38.76; T-S Or.1080.14.47).<sup>1295</sup>

**OMU:** The physician Assaf writes that radishes 'swell the stomach and their leaves are better than the roots and increase phlegm'.<sup>1296</sup> According to Shabbetai Donolo radish is one of the herbs that he uses to prepare 'tamruk'.<sup>1297</sup> Maimonides describes the use of radish to cause vomiting and for effective treatment of 'a hoarse voice'. The seed of the plant serves as a component in a concoction to strengthen the sexual organs, to heat them, and to 'increase coital activity'. Radish is listed among harmful foods, and is considered a hot and dry drug.<sup>1298</sup> Ibn al-Bayṭār describes the plant, cites Ibn Waḥshiyya in connection with its cultivation in the

<sup>1292</sup> Feliks, *Plants*, p. 134; Feliks, *Kilayim*, pp. 78–79; Feliks, *Yerushalmi*, II, 438.

<sup>1293</sup> Maimonides, *Regimen*, 1:11, n. 114.

<sup>1294</sup> Dioscorides, II.137.

<sup>1295</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1296</sup> Assaph, IV, 171.

<sup>1297</sup> Donolo, p. 22.

<sup>1298</sup> Maimonides, *Aphorisms*, 15:6; 21:80; 22:45; Maimonides, *Regimen*, 1:11; 2:7; Maimonides, *Sexual*, Introduction 8;

al-Shām region, and lists its medical uses citing important physicians of his own day.<sup>1299</sup>

**TM:** Although its nutritional value is not high (it contains 87% water and the rest is carbonates and a few vitamins), the garden radish of all varieties serves as a food in most countries of the world.<sup>1300</sup> The Arabs of Israel make use of the radish to improve virility, to prevent internal and external blood haemorrhages, to dissolve kidney stones, and to treat liver diseases.<sup>1301</sup> In Persia radish seeds were used as a purgative, to induce urination, and to break up stones in the urinary tract.<sup>1302</sup> The Jews of Iraq also made extensive use of radish for medical purposes such as dissolving kidney stones, increasing the amount of milk in nursing women, curing childbearing women, improving the voice, and for hair growth.<sup>1303</sup> Yemenite Jews used the plant to treat infections in the urinary tract, to increase urine flow, and to remove kidney stones.<sup>1304</sup>

**TAI:** Travel literature contains testimony to its being an agricultural crop for food and for lighting since the 6th century CE.<sup>1305</sup> Nāṣir-i Khusraw relates that when the governor of the al-Shām region complained to the Fatimid authorities in Egypt about the lack of olive oil for lighting the mosques, it was suggested that he substitute it with oil made of turnips and radish.<sup>1306</sup> A few Genizah fragments indicate the use of radish in the diet of the Genizah society.<sup>1307</sup>

## Rhubarb

*Rheum* sp. (Polygonaceae), **A:** *rībās*, *rāwand*<sup>1308</sup>

**DH:** The rhubarb species has 50 varieties, which were widespread in the temperate, sub-tropical regions of Asia and Central Europe. Rhubarb is a perennial herbaceous plant with thick roots and large leaves that

<sup>1299</sup> Ibn al-Baytar, al-Jami, III, 156–157; Leclerc, no. 1672. Cf. al-Antaki, p. 248.

<sup>1300</sup> Uphof, p. 443; Mahmood et al.

<sup>1301</sup> Krispil, p. 1159.

<sup>1302</sup> Hooper, p. 163.

<sup>1303</sup> Ben-Yakov, pp. 73, 74, 159, 220, 294, etc.

<sup>1304</sup> Reiani, no. 134. Cf. the uses in England and Europe: Grieve, pp. 667–668.

<sup>1305</sup> Detailed review in: Amar, Production, p. 237.

<sup>1306</sup> Khusraw, p. 56. It appears that the radish oil was imported from Egypt, for example: Gil, I, p. 201.

<sup>1307</sup> Goitein, Society, IV, pp. 232, 245.

<sup>1308</sup> Maimonides, Glossaire, p. 98, no. 350; Dinsmore & Dalman, no. 1507; Issa, p. 155, nos. 19–22.

lie spread out over the ground. It has an impressively tall, flowering stem with many blossoms. In the Land of Israel two varieties are grown: *Rheum palaestinum*, an endemic type which grows in the Negev, and *Rheum ribes*, which grows in the region of Mount Hermon.<sup>1309</sup> Amar has suggested identifying the rhubarb mentioned in medieval sources, especially Ibn al-Bayṭār, with the desert rhubarb. ‘Rāwand’ was presumably *Rheum officinale* and ‘al-rāwand al-shāmī’ was garden rhubarb, a plant cultivated in the region.<sup>1310</sup> Rhubarb has served as a medicinal substance in China since the 27th century BCE; written evidence from the 1st century BCE describes its use as inducing vomiting, which makes it effective against poisons. It also served to reduce fever, to cause constipation, as an emmenagogue, to treat skin diseases, to stem haemorrhages, and to lower the level of cholesterol in the blood.<sup>1311</sup> Dioscorides calls the plant *Rha*, and describes its use in strengthening the stomach, reducing gases, treating spasms, and curing haemorrhoids, the liver, the kidneys, and the chest, asthma, dysentery, malaria, and chronic pneumonia.<sup>1312</sup>

**PU:** Different kinds of rhubarb figure in 6 lists of *materia medica* (T-S Ar.30.274 [2]; T-S Ar.35.366; T-S Ar.39.451; T-S Ar.43.315; T-S NS 224.62; T-S NS 321.49) and in 9 prescriptions: for invalid diet (Chinese, T-S Ar.42.189) and for unknown uses (T-S Ar.34.305 [2]; T-S NS 223.82–83; T-S Or.1081.J.39; rabb, T-S AS 148.27; hot, T-S Or.1080.1.87; syrup, T-S Ar.42.110; Chinese, T-S AS 179.283; T-S NS 83.28 [yellow])

**TU:** A few kinds of rhubarb are mentioned as simples in medical books: in a discussion on treatment for lowering body temperature (T-S Ar.41.80), in a prescription for the treatment of excess of yellow bile (with liquorice pills; T-S NS 224.178r), in a lexicon of *materia medica* (T-S Ar.39.375), and in recipes for unknown uses (T-S AS 182.216r).<sup>1313</sup>

**OMU:** Maimonides notes that varieties of the ‘rabiobrabari’ are used as a cathartic and are effective for the liver.<sup>1314</sup> Ibn al-Bayṭār in his entry ‘ribās’ describes the plant and lists its medicinal uses, such as strengthening the stomach, improving its smell, softening the faeces, cessation of thirst and vomiting, relieving jaundice, regulating the heart beat and improving the appetite. His quotations from other physicians indicate

<sup>1309</sup> Feinbrun-Dothan, p. 112; Plants & Animals, X, p. 42; see figure 43.

<sup>1310</sup> Amar, Ibn al-Baytar, p. 74, n. 71.

<sup>1311</sup> For the history of the plant, its medicinal uses and trade see: Foust, *Mysteries; Foust, Rhubarb*.

<sup>1312</sup> Dioscorides, III.2.

<sup>1313</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>1314</sup> Maimonides, *Aphorisms*, 9:88; 21:30, 75, 78; *Maimonides, Regimen*, 3:2.

that the plant was also used to treat haemorrhoids, smallpox and pustules, as well as to cool the blood.<sup>1315</sup> In his entry 'rāwand' he lists medicinal uses such as relieving various pains, curing internal ailments, and strengthening internal organs.<sup>1316</sup> al-Qazwīnī adds that rhubarb is effective against plague, sharpens the eyesight, cures jaundice, rubella, and smallpox, and that it also serves to treat diabetes and nausea.<sup>1317</sup>

**TAI:** Rhubarb was traded in the medieval Mediterranean by Jewish traders in the cities and ports of Cairo, Qayrawān, Alexandria, and Tyre, according to merchants' letters mainly of the 11th century.<sup>1318</sup> Ibn al-Bayṭār says that 'rībās' was not to be found in Spain or the Maghreb (North Africa), but that it was 'prevalent in al-Shām' and in northern countries.<sup>1319</sup> Elsewhere he notes that the 'rāwand al-shāmī', which was brought from the 'district of 'Ammān in the al-Shām region', was not greatly used for remedial purposes, meaning that it was of poor quality.<sup>1320</sup> al-Dimashqī mentions both 'rībās' and 'rāwandān', and counts them among the 90 varieties of useful herbs in Mount Lebanon whose harvesting could provide a living.<sup>1321</sup> From various medieval sources it appears that rhubarb was an important seasoning spice that was imported overland by the Crusader kingdom from eastern countries such as India or China.<sup>1322</sup>

## Rose [dog rose]

*Rosa canina* (Rosaceae), **A: nasrīn, ward**<sup>1323</sup>

**D&H:** The wild dog rose is a large shrub, which grows in the mountains of Israel and in damp Mediterranean groves. Its leaves are pinnate and composite, and its flowers are pink with grape-like fruits or hips of a deep scarlet colour (see figure 44).<sup>1324</sup> Another variety that is widespread

<sup>1315</sup> Ibn al-Baytar, al-Jami, II, p. 147; Leclerc, no. 1072.

<sup>1316</sup> Ibn al-Baytar, al-Jami, II, p. 131; Leclerc, no. 1018. Cf. al-Antaki, p. 165 and Ibn Sina, p. 429.

<sup>1317</sup> al-Qazwini, p. 250. Cf. Ibn Sina, p. 432.

<sup>1318</sup> Gil, III, p. 210, no. 494, Gil, Kingdom, II, p. 825, no. 277, p. 838, no. 280. Goitein, Society, I, p. 155, II, p. 268, III, p. 380, no. 407, IV, p. 416, no. 740.

<sup>1319</sup> Ibn al-Baytar, al-Jami, II, p. 147; Leclerc, no. 1072.

<sup>1320</sup> Ibn al-Baytar, al-Jami, II, p. 131; Leclerc, no. 1018.

<sup>1321</sup> al-Dimashqi, p. 199.

<sup>1322</sup> Praver, History, pp. 125–127. Further details on its trade are in Heyd, pp. 665–667.

<sup>1323</sup> Maimonides, Glossaire, p. 74, no. 253; Issa, p. 157, no. 1; Plants & Animals, X, p. 133; Dinsmore & Dalman, no. 671.

<sup>1324</sup> Plants & Animals, X, p. 133.



in this region is the *Rosa phoenicia*, a large thorny shrub which blooms in the summer with abundant pink blossoms. The rose hips are shaped like tiny pears (1 cm. long) of a dark red colour.<sup>1325</sup> The Latin name for the dog rose originates in a story about a Roman soldier who cured himself of hydrophobia (rabies) by eating the root of the dog rose.<sup>1326</sup> But the Hebrew name may also derive from the Persian 'lawarda'. The dog rose is not mentioned in the Bible, but many commentators have mistakenly identified it with 'shoshan/shoshanna' (lily).<sup>1327</sup> One of the first times that rose is mentioned in literature is by Ben Sira (24:14): 'as the rose seedlings in Jericho'. Use of this plant apparently increased during the Second Temple period. The Mishna mentions the rose as an ornamental plant and it was also used in the cosmetics industry, as a body lotion, and for concocting medicines. The medicinal use of the dog rose is also described by physicians of the classical period. Dioscorides, for example, describes the medicinal use of a variety of the dog rose, to treat stomach disorders, headaches, gynaecological problems, skin diseases, wounds, and the eyes and gums.<sup>1328</sup>

**PU:** Different products of rose figure in 14 lists of *materia medica* (T-S Ar.35.252; T-S Ar.39.451; T-S AS 182.258; T-S NS 224.65; T-S NS 279.57; water, T-S Ar.35.82; T-S Ar.35.327; T-S Ar.39.451; T-S AS 184.234; T-S NS 306.117; fresh, T-S Ar.39.450; syrup, T-S NS 164.12; flowers, T-S AS 184.187; Iraqi, T-S AS 184.234) and in 57 prescriptions: for treating liver ailments (syrup—T-S Ar.39.274), lice (oil—T-S Ar.43.54), weakeyesight and migraine (Maimonides; rose, T-S Ar.30.286; fresh syrup, T-S Ar.30.286), eye diseases (T-S Ar.44.162; T-S AS 161.23), lincti and ointment (water, T-S AS 147.192 [2]), cleaning or treating the teeth (T-S Ar.39.451); diet (fresh, T-S Ar.41.71; syrup, T-S Ar.41.71), invalid diet (syrup, T-S Ar.42.189); as a purgative (syrup, T-S Ar.39.458), in a chewing gum (dry tables, T-S Ar.42.20) and as food and medical simples (T-S Or.1081 J.71), and for unknown uses (T-S K25.212; T-S Ar.30.305; T-S Ar.34.239; T-S Ar.42.152; T-S Ar.43.47; T-S AS 148.27; T-S AS 182.167; T-S NS 327.97; T-S NS J38; T-S Ar.39.450; [*shāmī*]; T-S AS 177.40; sweet, T-S NS 223.82–83; oil, T-S Ar.30.65; fresh, T-S AS 179.283; T-S AS 183.216; T-S NS 223.82–83; T-S NS 327.97; T-S 12.33; water, T-S Ar.42.110, T-S Ar.43.238 [ointment]; T-S Ar.43.338; T-S AS

<sup>1325</sup> Ibid., X, pp. 132–133.

<sup>1326</sup> Dafni, *Edible*, p. 36; Goor, *Rose*, p. 2.

<sup>1327</sup> Discussion in Feliks, *World*, p. 283; Low, III, pp. 193–211.

<sup>1328</sup> Dioscorides, I.123.

151.56 [Iraqi—potion]; T-S AS 183.216, T-S AS 177.417 [compound]; T-S NS 225.108; syrup, T-S Ar.30.65; T-S Ar.42.110; T-S NS 223.82–83; T-S Or.1081.J.39 [2]; T-S 12.33; flowers, T-S Ar.40.87 [powder]; red, T-S Ar.43.338; rose jam [*murabbā*], T-S Ar.43.338; T-S AS 177.417; T-S NS 306.117; T-S NS 264.86; T-S Or.1081.1.66; rose julep, T-S Ar.30.65; T-S Ar.34.239; T-S Ar.41.72 [purgative]; T-S AS 146.197; T-S AS 176.123; T-S AS 216.200).

**TU:** Many fragments of medical books attest to the medicinal uses of several products extracted from rose bushes. Dog rose is mentioned in a recipe for dyeing hair black (T-S Ar.40.121). Rose is found in many fragments, sometimes as one out of several simples in a recipe for unknown uses (T-S Ar.34.239; T-S AS 176.400; T-S AS 176.401–5), one of which was extracted from Ibn Sīnā's *al-Qānūn* (cf. ed. Bulaq, III:302–3; T-S Ar.41.96); another is for preparation of chewing gum (T-S Ar.42.20). Yet another contains a recipe for preparation of a *rubb* and an electuary (T-S NS 34.16). It is also found in recipes for the treatment of children with umbilical hernia and incessant crying (T-S Ar.40.160), quartan fever, and burning black bile and phlegm (T-S NS 306.74). Rose is mentioned in a letter addressed to higher authority, reporting special treatment of some eye complaints including inflammation, dimness of vision and widening of the pupils; the use of certain lamellas, potions, and eye drops is recommended (T-S NS 327.93). Seeds of Iraqi rose were part of a powder recipe for the treatment of diarrhoea (T-S Ar.40.179r). Red rose is mentioned in few fragments, in a recipe for jaundice with acute fever and palpitation (T-S NS 305.116) and in a lexicon of *materia medica* (T-S AS 87.77; T-S AS 87.99; T-S AS 88.10; T-S AS 170.136). Rose blossom features in a recipe for syrup, which was copied, according to Isaacs, from the beginning of chapter 5 in the hospital pharmacopoeia of Dāwud Ibn Abī al-Bayān (T-S Ar.39.91). Julep (sweet rose water for medicinal uses, mainly for preparing syrups) is mentioned in a few fragments: one sets forth its preparation (T-S AS 176.123v), another presents a recipe containing julep with rose water and considered good for headache and giddiness (T-S AS 181.35v). Rose leaves are found a recipe for the treatment of coughs and colds attributed to Galen and Ibn Māsawayh (T-S Ar.11.11). Rose oil and violet oil are recommended for the management of fevers (T-S K 14.46). Rose oil is in a recipe for the treatment of inflammatory swellings found in chapter 15 of an unknown book (T-S Ar.40.171) and in a recipe citing Galen for skin lotions and poultices to heal pustules and remove scabs (T-S Ar.42.22) and to treat earache (T-S AS 179.268). It also appears in recipes for unknown uses (T-S AS 179.259; T-S AS 179.279; T-S AS 180.59).

Rose *rubb* occurs in a fragment explaining the preparation of different kinds of preserves, including rose and violet *rubbs* (T-S AS 158.284; T-S AS 158.266). Rose seeds are in a recipe for unknown uses (T-S AS 184.187r), in another bearing the name of Abū ‘Alī (T-S Ar.39.211r), and in one to treat weakness of the liver and bile corruption (T-S AS 172.7). Rose syrup too is in a recipe for unknown uses that begins with basmalah (T-S Ar.42.110r). Rose water appears in recipes for unknown uses (potion, T-S AS 166.217), one written by the anonymous pharmacist known as al-Dimashqī (T-S Ar.39.65) and copied from al-Kindī’s *Kitāb kimmīyā al-‘itr*’ [The book of chemistry of perfume]. It is also mentioned in a list of *materia medica* (T-S AS 147.204v) and in recipes to treat cold (electuary; T-S Ar.11.13v), to stop excess salivation (with squil, myrobalan, and endive; T-S NS 164.62v), against diarrhoea (T-S Ar.41.104), headache and giddiness (with julep; T-S AS 181.35v), melancholia and mania (with valerian; T-S NS 90.39), headache, pain in the eyes, and stomach ache (a drink with valerian; T-S NS 222.27); to ‘quieten the blood’ in certain skin complaints (T-S NS 90.66v). Rose water, or rose oil or rose sherbet or wine, are recommended (T-S Ar.3065). A particular fragment was found that is part of a tabulated work on medicine covering general management of fevers, cancer, erysipelas, soft and hard inflammatory swellings, and elephantiasis; rose water is one of the simples mentioned (T-S Ar.41.137). Another fragment offers dietetic advice to invalids in which rose water is recommended (T-S Ar.42.35). Methods for testing rose water for adulteration are set out in a fragment which Isaacs believes is probably part of the work of the ‘muhtasib’ (censor; T-S Ar.43.39). Flour and rose water are considered a dietetic sweet dish (T-S AS 182.308), and are baked as a bread for the management of feverish patients (T-S AS 183.183).<sup>1329</sup> It is also used as a soft drink.<sup>1330</sup>

**OMU:** Literary encomiums of Jerusalem mention rose water and perfumes distributed to those visiting the Dome of the Rock during the early Arab period.<sup>1331</sup> al-Tamīmī asserts that several species of roses were used in remedies in Jerusalem, including one named ‘Rome, Damascus, Ramlah and Jerusalem.’<sup>1332</sup> al-Kindī reports the medicinal use of rose oil to treat haemorrhoids, stomach ulcers, and swellings. It also serves as a component in a preparation to treat liver diseases. Rose blossoms were

<sup>1329</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>1330</sup> Goitein, *Society*, IV, 261.

<sup>1331</sup> al-Wasti, p. 82; Ibn Katir, VII, p. 280.

<sup>1332</sup> Amar and Seri, *Tamimi*, p. 32; al-Ansari 77b, 28a.

used for treating disorders of the stomach, liver, and spleen, and for the preparation of medicines against pains of the throat and mouth, fever, and mucus.<sup>1333</sup> Benevenutus states that rose sugar is a component in a medication called the 'Jerusalem pill,' which was used to cure cataract, while 'dried rose leaves' are an ingredient in a medication called 'Jerusalem collyrium.'<sup>1334</sup> Maimonides says that the rose seed is a component in a soporific, that rose oil and rose honey are a medication for snakebite, that rose water is a component in a poultice to dress bee stings, and that rose blossoms serve as a light purgative and a component in a strong one. Roses are also used as a medication for general strengthening and as an ingredient in the 'great 'iṭriful' to fortify the heart, to delay old age, and to increase sexual potency.<sup>1335</sup> al-Qazwīnī cites Ibn Sīnā in praise of the plant and stating that the scent 'counteracts the smell of sweat.' Other physicians recommend the plant for easing pain. Rose essence is also used to treat eye inflammation, haemorrhages, and fainting fits.<sup>1336</sup> In his entry 'nasrīn' al-Qazwīnī again cites Ibn Sīnā, who asserts that the rose is used to treat ear diseases, toothache, and headaches, and to stop hiccups.<sup>1337</sup> al-Bīrūnī and al-Ghāfiqī in their entry 'ward' described these and other uses.<sup>1338</sup>

**TAI:** In the Middle Ages the rose was cultivated as a highly prized agricultural crop in the Middle East because of the rose water produced from it: 'duhn al-jull' (rose oil) and 'jullanjabīn' (roses soaked in honey).<sup>1339</sup> According to the description of the plant, its habitat, and its uses during the Middle Ages,<sup>1340</sup> it may be assumed that the variety cultivated for agricultural and medicinal purposes in the Middle East was the dog rose. During that age rose growing was widespread and renowned mainly in the north of Israel and in the region of Damascus, 'the best rose water in the world' was prepared.<sup>1341</sup> During the Mamluk period the rose was listed as a perfume plant in the al-Shām region, and high quality rose water was exported to all countries.<sup>1342</sup> Roses were also listed as Syrian

<sup>1333</sup> Collected references in: al-Kindi, pp. 345–346, no. 318.

<sup>1334</sup> Benevenutus, pp. 33, 44.

<sup>1335</sup> Maimonides, Aphorisms, 21:67, 69; Maimonides, Sexual, p. 41; Maimonides, Poisons, pp. 111, 125.

<sup>1336</sup> al-Qazwini, p. 237. Cf. Ibn Sina, pp. 299–300.

<sup>1337</sup> al-Qazwini, p. 263. Cf. Ibn Sina, p. 374.

<sup>1338</sup> al-Biruni, I, p. 336; al-Ghafiqi, no. 273.

<sup>1339</sup> Maimonides, Glossaire, p. 35, no. 85; p. 39, no. 106. Cf. *ibid.*, p. 44, no. 121.

<sup>1340</sup> Amar, Production, pp. 115–117.

<sup>1341</sup> al-Dimashqi, pp. 195–198; Amar, Production, pp. 115–116.

<sup>1342</sup> al-Qalqashandi, p. 87.

products exported from Tripoli and Beirut.<sup>1343</sup> The scholar al-Ghazzī praises the medicinal quality of the Damascus rose.<sup>1344</sup>

Rose water is mentioned as an important commodity in several fragments concerning trade in the 11th century between the cities of Cairo, Alexandria, Mahdiyya, and Tatay.<sup>1345</sup> Trading documents found in the Genizah contain information on the export of ‘murabbā’ (rose jam)<sup>1346</sup> from Tyre to Egypt. The jam was made from the meaty fruit and petals and stored in jars.<sup>1347</sup> Elsewhere there is mention of exported ‘dried rose called azrarose’.<sup>1348</sup> Levi ben Yefet the Karaite, who was active in the Land of Israel at the beginning of the 11th century, notes that it is permitted to take ‘sharāb al-ward al-murabbā’ (rose syrup) as a medication on the Sabbath.<sup>1349</sup> Rose oil is mentioned in orders of two different ‘sharābī’s (syrup-sellers) and in a contract for the termination of a partnership.<sup>1350</sup> Ibn al-Bayṭār mentions the rose fruit called ‘dalīk’ used for medicinal purposes when ripe, and adds that in al-Shām it is called ‘ṣaram al-dīk’.<sup>1351</sup>

## Rosemary

*Rosmarinus officinalis* (Lamiaceae), A: ’iklīl al-jabal, ḥass lūbān<sup>1352</sup>

**D&H:** Strongly aromatic evergreen shrub (2 m), with narrow, dark green, pine-like leaves.<sup>1353</sup> The meaning of the scientific name is ‘sea dew’ because of the resistance of the plant to mists and salt. In ancient Egypt and during the Hellenistic period the plant was used, among other things, to improve the memory.<sup>1354</sup> According to Dioscorides, *Libanotos*, identified with rosemary, was a medicine for jaundice.<sup>1355</sup> In the Middle Ages some identified rosemary in the Talmud (Bab. Talmud,

<sup>1343</sup> Piloti, p. 136.

<sup>1344</sup> Hamarneh, Plants, p. 256.

<sup>1345</sup> Goitein, Society, II, pp. 271, IV, pp. 233, 261.

<sup>1346</sup> Low, III, p. 209.

<sup>1347</sup> Gil, Kingdom, IV, p. 942, 20 different fragments on the subject in the index.

<sup>1348</sup> *Ibid.*, p. 346, no. 275.

<sup>1349</sup> Levi Ben Yefet, p. 47a.

<sup>1350</sup> Goitein, Society, I, pp. 151, 179.

<sup>1351</sup> Ibn al-Baytar, al-Jami, I, p. 95; Leclerc, no. 877.

<sup>1352</sup> Issa, p. 157, no. 12; Dinsmore & Dalman, no. 1379.

<sup>1353</sup> Chevallier, p. 125.

<sup>1354</sup> Plants & Animals, XII, p. 96.

<sup>1355</sup> Dioscorides, III.89.

Berakhot, 43b).<sup>1356</sup> In Europe the use of rosemary for curative purposes was widespread.<sup>1357</sup>

**PU:** Rosemary figures in 14 lists of *materia medica* (T-S Ar.35.328; T-S Ar.39.307; T-S Ar.39.487; T-S Ar.43.317; T-S AS 152.131; T-S AS 176.22; T-S AS 182.222; T-S AS 182.233; T-S AS 184.234; T-S NS 164.12; T-S NS 264.80; T-S NS 279.57; T-S NS 306.106; T-S NS 325.127) and in a prescription for unknown uses (T-S AS 162.185 [shāmī]).

**TU:** Rosemary is mentioned in medical books in a prescription for preponderance of black and yellow bile (T-S Ar.39.157) and in one for unknown uses (T-S NS 90.51), and in a pharmacopoeia (T-S NS 222.70).<sup>1358</sup>

**OMU:** Shabbetai Donolo states that the honey produced from rosemary is listed among good medicinal substances.<sup>1359</sup> In his entry Ibn al-Bayṭār describes the plant and lists its medical uses, such as inducing urine flow, accelerating menstruation, improving body odour, clearing obstructions in the liver and spleen, cleansing the lungs, curing cough, and preserving meat.<sup>1360</sup>

**TM:** The plant was traditionally used to treat headaches, asthma, pains of the throat and lungs, to improve the memory, and as a disinfectant.<sup>1361</sup> The Bedouins in the Negev use the plant to treat stomach pains, gases, and for soothing. The plant also serves to prevent miscarriage and to increase virility.<sup>1362</sup> The Jews of Iraq used it to smooth out wrinkles in the skin,<sup>1363</sup> while Yemenite Jews called the rosemary 'besamim' and used its branches and leaves to treat heart pains, to disinfect the womb, to cure infections, to reduce swellings of the body, and to open the urinary tract.<sup>1364</sup>

**TAI:** Rosemary is one of the perfume and medicinal plants cultivated during the Mamluk period in the church near Beirut and in the Levant in general.<sup>1365</sup> According to the researcher Hamarneh, the rosemary plant in 'Ajlūn was part of the childhood landscape of the physician Ibn

<sup>1356</sup> Discussion of identity in Amar, Production, p. 273.

<sup>1357</sup> Grieve, pp. 681–683.

<sup>1358</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1359</sup> Donolo, p. 10.

<sup>1360</sup> Ibn al-Baytar, al-Jami, I, 51; Leclerc, no. 129. Cf. al-Antaki, p. 55, and also Ibn al-Baytar, al-Jami, IV, pp. 116–17; Leclerc, no. 2051.

<sup>1361</sup> Uphof, p. 455; Loewenfeld & Back, p. 215; Plants & Animals, XII, p. 176.

<sup>1362</sup> Abu-Rabia, p. 21.

<sup>1363</sup> Ben-Yakov, p. 367.

<sup>1364</sup> Reiani, no. 106.

<sup>1365</sup> Suriano, pp. 170, 221.

al-Quff al-Karakī.<sup>1366</sup> Rabbi Moshe Poriat of Prague (1650) describes the markets of Jerusalem and noted that ‘there were many fragrant herbs especially rosemary—their season being all year round’.<sup>1367</sup>

## Rue

Wild plant: African Rue, Fringed Rue (*Ruta chalepensis*), **A:** **sadhāb**.<sup>1368</sup>  
Cultivated plant: Common Rue (*Ruta graveolens*) (Rutaceae), **A:** **fayjān**<sup>1369</sup>

**D&H:** Strongly aromatic evergreen perennial (1 m), with fleshy three-lobed leaves, yellow-green five-petalled flowers, and round seed capsules.<sup>1370</sup> The scientific name of the genus derives from the Latin word for bitter, a reference to the plant’s bitter taste. The plant appears in the Mishna (Kilayim 1:8). Rue grew within houses (Okzin, 1:2), and perhaps that is why it was exempt from tithes and subject to the sabbatical year (Shevi’it, 9:1).<sup>1371</sup> The plant once grew to the size of a tree, as described by Josephus: ‘Within the courtyard of the King [in Macherus] there grew a rue wonderful for its largeness, no way inferior to fig trees either in height or in thickness’.<sup>1372</sup> Dioscorides describes the uses of two species of rue to treat snakebite, chest pains, various infections such as those of the lungs and intestines, to eliminate worms, and to relieve pains of the joints, eyes, and head.<sup>1373</sup> The plant, which was used by the Greeks and Romans (as a food and medicinal plant), was taken to Britain by the Romans and was called ‘herb of grace’ by Shakespeare.<sup>1374</sup>

**PU:** Rue figures in 3 lists of *materia medica* (T-S Ar.30.274; T-S AS 177.200; T-S Ar.39.451) and in 3 prescriptions: for eye diseases (water, T-S Ar.42.60 [2]) and for unknown uses (T-S Ar.43.338; T-S AS 177.39).

**TU:** Rue is mentioned in medical books in recipes for management of diarrhoea (T-S Ar.41.104) and the treatment of wind, warts, dysuria, dysmenorrhoea, and hard swellings (T-S Ar.42.151), aphasia, muscles spasms, tension, shaking, and facial palsy (T-S AS 144.306); bladder

<sup>1366</sup> Hamarneh, Ibn al-Quff, p. 31.

<sup>1367</sup> Ya’ari, Travels, p. 280.

<sup>1368</sup> Maimonides, Glossaire, no. 279; Issa, p. 159, nos. 7–9; Dinsmore & Dalman, no. 384.

<sup>1369</sup> Description: Plants & Animals, X, 207; Loewenfeld & Back, p. 216.

<sup>1370</sup> Chevallier, p. 263; see figure 45.

<sup>1371</sup> Feliks, Shevi’it, pp. 203–204; Feliks, Plants, p. 123; Feliks, Yerushalmi, p. 394.

<sup>1372</sup> Josephus, JW, VII, 6:3.

<sup>1373</sup> Dioscorides, III.52.

<sup>1374</sup> Loewenfeld & Back, p. 216.

complaints (T-S AS 178.303), alopecia (topically applied), and dysuria (rue cooked in oil; T-S AS 164.28). It also appears as a simple in a lexicon of *materia medica* (T-S AS 153.51r). Rue leaves were used against fever, black bile, and phlegm (T-S NS 306.74), rue oil against convulsion and tetany, fevers, and colic (T-S Ar. 40.162), and rue seeds against entropion and roughness of the eyelids (T-S Ar.39.167); wild rue is in a quasi-medical formula for incense (T-S NS 306.198v) and in a recipe for weak and dim vision and drooping eyelids (T-S Ar.41.40).<sup>1375</sup>

**OMU:** al-Kindī notes a variety of uses for the plant and its products. The resin serves as a component in expectorants and is also used for treating the gall bladder, joint infections, and nervous diseases, and to prepare poultices to dress the spleen, liver, kidneys, and stomach.<sup>1376</sup> Shabbetai Donolo mentions the plant and its medical uses.<sup>1377</sup> Maimonides states that the plant is a hot and dry medication. The leaves served as a component in ‘theriac’, a food for those who were bitten, and a component in an enema to treat constipation accompanied by heartburn. The resin of the plant was a component in a medication that caused ‘sexual excitation and stiffened the male sexual organ so that it does not droop.’<sup>1378</sup> Ibn al-Bayṭār reports that the resin of the plant is hot and dry, and is effective in treating eye diseases and sores in the throat and armpits.<sup>1379</sup> The oil of rue and its medical properties are described as well.<sup>1380</sup> According to al-Qazwīnī, this is a famous plant with extensive uses, including improving virility, aborting foetuses, and treating epilepsy, headaches and toothache, blindness, and skin diseases.<sup>1381</sup>

**TM:** The Arabs of Israel used the leaves of the rue to cure cough, snake-bite, headaches and stomach aches, syphilis, internal infections, putrescent wounds, measles in children, and insanity; to stimulate blood circulation, to calm hysteria and nervousness, to reduce fever, to dissolve kidney stones, to treat shortness of breath, to freshen the eyes, and to repel lice. The roots were used to treat paralyzed limbs.<sup>1382</sup> TM in the Levant and in Africa makes use of various species of rue for these and

<sup>1375</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>1376</sup> al-Kindi, nos. 1, 5, 8, 32, 37; al-Biruni, I, pp. 180–181.

<sup>1377</sup> Donolo, p. 10, n. 45.

<sup>1378</sup> Maimonides, Poisons, pp. 113, 133; Maimonides, Aphorisms, 9:47, 88; 21:34; Maimonides, Sexual, 12:1.

<sup>1379</sup> Ibn al-Baytar, al-Jami, III, p. 86; Leclerc, no. 1413.

<sup>1380</sup> Ibn al-Baytar, al-Jami, II, p. 105; Leclerc, no. 905.

<sup>1381</sup> al-Qazwini, p. 251. Cf. Ibn Sina, pp. 388–389.

<sup>1382</sup> Palevitch et al., p. 127.



other purposes.<sup>1383</sup> TM in Europe and Britain applies common rue for similar needs.<sup>1384</sup>

**TAI:** In Crusader times the plant served as a condiment and a medicinal substance.<sup>1385</sup> The traveller Nāṣir-i Khuṣraw described the plant after visiting Kiryat Anavim near Jerusalem.<sup>1386</sup> During the Mamluk period rue (*ruta*, *rutham*) was listed among the perfume and condiment plants of the Land of Israel.<sup>1387</sup>

## Saffron

*Crocus sativus* (Iridaceae), **A: za‘farān**<sup>1388</sup>

**D&H:** Saffron is a species of crocus. It is a small geophyte (up to 15 cm.) with lilac-coloured flowers typical of irises. The floral stigmas are orange hued and are of high value (see figure 46). Seventy varieties of saffron prevail in Holarctic regions. Nine varieties grow in Israel, the most commonly used being the winter saffron.<sup>1389</sup> Saffron has been a seasoning plant since the 4th millennium BCE, in Chaldea. It was used in Assyria and Babylon to cure urinary problems, stomach disorders, and women’s ailments, and also for disinfection during childbirth. Similar uses were also made of it in ancient Egyptian medicine.<sup>1390</sup> In the Bible saffron is mentioned only once (Song of Songs, 4:14). Dioscorides describes saffron, a diuretic drug used for curing the eyes and for women’s ailments, womb disorders, skin diseases, and ear inflammations. According to him, saffron was a medication composed of saffron oil.<sup>1391</sup> During the Roman and Byzantine periods the plant was grown in Europe and was used as seasoning and for curative purposes. The Jewish Sages of the Mishna and Talmud also mention the plant occasionally: in connection

<sup>1383</sup> Ibid., pp. 129–130; Reiani, p. 46, no. 108; Uphof, p. 461; Hooper, p. 167.

<sup>1384</sup> Culpepper, pp. 304–305; Loewenfeld & Back, p. 216; Hill, p. 467; Uphof, p. 461; Grieve, pp. 694–696.

<sup>1385</sup> Praver, Colonial, p. 441.

<sup>1386</sup> Khusraw, p. 19; *PPTS*, IV, p. 22.

<sup>1387</sup> Borchard, p. 86; Adorno, p. 248.

<sup>1388</sup> Identification and synonyms discussed in Maimonides, Glossaire, p. 47, no. 135; p. 64, no. 205; Dinsmore & Dalman, no. 1653; Issa, p. 60, no. 6.

<sup>1389</sup> *Plants & Animals*, XI, p. 250. For other remedial uses see Hill, pp. 131–132, 446–447; Uphof, p. 159; Dafni, *Mandrake*, pp. 41, 68.

<sup>1390</sup> Levey, *Chemistry*, pp. 77, 105.

<sup>1391</sup> Dioscorides, I.25, 26.

with incense for the Temple, as a medication for nose-bleeds, to cause infertility, and to strengthen the bowels.<sup>1392</sup>

**PU:** Saffron figures in 21 lists of *materia medica* (T-S Ar.30.274; T-S Ar.30.291; T-S Ar.35.82; T-S Ar.35.229; T-S Ar.35.252; T-S Ar.35.326; T-S Ar.39.136; Ar.39.139 [2]; T-S Ar.39.487; T-S Ar.43.317; T-S AS 153.51; T-S AS 176.151; T-S AS 176.22; T-S AS 177.139; T-S AS 179.132; T-S AS 182.3; T-S NS 306.106; T-S NS 306.117; T-S NS 321.49; T-S NS 325.127; T-S Ar.39.136 [*rāmī*]) and in 13 prescriptions: for eye diseases (T-S Ar.44.162 [2]), as a plaster (T-S NS 222.34), and for unknown uses (T-S Ar.30.227; T-S Ar.34.305 [2]; T-S Ar.41.81; T-S Ar.42.152 [2]; T-S AS 177.40 [compound]; T-S AS 177.39; T-S AS 181.127; T-S AS 214.96; T-S NS 151.52; T-S NS 297.17; T-S NS 306.134).

**TU:** Saffron was an important simple and is mentioned in many medical book fragments, mainly of lexica of *materia medica* and recipes for unknown uses (T-S Ar. 35.229; T-S Ar.40.57; T-S Ar.41.37; T-S Ar.41.90; T-S NS 90.44; T-S NS 306.54; T-S NS 306.115; T-S AS 160.197; T-S AS 162.132; T-SAS 166.217; T-S AS 166.238; T-S AS 166.236–7; T-S AS 167.16; T-S AS 167.17; T-S AS 170.136; T-S AS 172.22; T-S AS 177.139r; T-S AS 180.32r; T-S AS 180.189; T-S AS 180.199; T-S AS 181.193; T-S AS 180.171; T-S AS 182.179). Several special prescriptions are these: one by the anonymous pharmacist known as al-Dimashqī (the Damascene; T-S Ar.39.65), one followed by the phrase ‘al-shāfi waḥduhu’ [the only healer; T-S Ar.42.152v), and one copied from al-Kindī’s *Kitāb kimmīyā al-‘itr* (The book of the chemistry of perfume; T-S Ar.41.29). It also appears as one of several simples in recipes for the treatment of kohl for hot and burning sensation in the eye (T-S K 25.83); stomach and liver complaints (T-S Ar.10.5); headache and diseases of brain (T-S Ar.40.157); eye complaints such as weak and dim vision and drooping eyelids (T-S Ar.41.40); eye complaints, lippitude, inversion, and lice of the eyelids (T-S AS 179.235); epiphoral drops to increase the flow of tears and a potion for skin complaints (T-S NS 90.66v); loss of teeth (T-S NS 306.73); weakness of liver and bile corruption (T-S AS 172.7); and to strengthen penile erection (T-S AS 181.82; T-S AS 181.112). A fragment contains advice to a patient suffering unknown complaints: drink wine and aniseed with saffron before taking a bath (T-S 166.208r). It also appears in a quasi-medical herbal remedy for pains and swelling

<sup>1392</sup> In detail in Low, II, pp. 7–26; Feliks, World, pp. 249–251.

(T-S Ar.40.149) and in other recipes for unknown uses (T-S NS 90.16; T-S AS 180.179).<sup>1393</sup>

**OMU:** The physician Assaf describes the plant, giving its names and listing its medicinal qualities: 'Saffron is 'za'farān' which has a hot and dry potency to release urine and cure women's ailments, and its roots are effective in inhibiting urine and beneficial for the kidneys. If bandaged over a boil, it will dissolve and cure it.'<sup>1394</sup> al-Kindī reports that 'za'farān' is an important component in many medications, mainly the 'Indian ointment' to improve the state of mind and to dispel headaches. Additional medicinal uses listed by him include the treatment of the liver, throat, mouth, teeth, gums, and eyes, and for epilepsy. He also describes the use of 'za'farān' in spices and various mixtures.<sup>1395</sup> Benevenutus mentions the use of 'za'farān', which is a component in a medication for cataract called the 'Jerusalem Electuary.'<sup>1396</sup> Among the varieties of saffron, Ibn Māsawayh mentions the 'Shāmī' type currently used in his day.<sup>1397</sup> 'Za'farān' is listed among the spices and seasonings used in the rites performed at the Dome of the Rock on the Temple Mount during the early Arab period.<sup>1398</sup> Maimonides cites many medicinal uses for saffron; for example, according to Ibn Zuhr 'za'farān' is a component in a mild purgative, and according to al-Tamīmī it is a sexual stimulant and a component in various medications for curing intestinal ailments.<sup>1399</sup> Ibn al-Bayṭār says that 'za'farān' is a drug to sharpen the senses, prompt the memory, slow the heartbeat, improve eyesight, relieve aches (of the ears, teeth, joints, feet, and back). It stops haemorrhages, strengthens internal organs (stomach, liver, and spleen), cures inflammations, women's ailments and epilepsy, stimulates the appetite, and is a contraceptive.<sup>1400</sup> Saffron was also used for dyeing a bride's hair<sup>1401</sup> and clothing<sup>1402</sup> in Jewish families in the medieval Mediterranean, and as food spice.<sup>1403</sup>

<sup>1393</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1394</sup> Assaph, IV, 397.

<sup>1395</sup> al-Kindī, p. 275, no. 127. Cf. Ibn al-Baytar, al-Jami, II, pp. 162–163; al-Antaki, pp. 178–179.

<sup>1396</sup> Benevenutus, p. 37.

<sup>1397</sup> Ibn Masawayh, p. 15.

<sup>1398</sup> al-Wasti, p. 92.

<sup>1399</sup> Maimonides, Regimen, 3:2; Maimonides, Aphorisms, 9:46; 20:86; 21:76.

<sup>1400</sup> Ibn al-Baytar, al-Jami, II, pp. 162–163; Leclerc, no. 1110. Cf. al-Antaki, pp. 178–179.

<sup>1401</sup> Goitein, Society, III, p. 77.

<sup>1402</sup> Ibid., IV, pp. 173, 175.

<sup>1403</sup> Ibid., IV pp. 233, 260.

al-Qazwīnī also describes ‘za‘farān’, adding that the crocus bulb is edible. He then cites Ibn Sīnā stating that the seeds are soporific and improve the eyesight, while the plant itself is a sexual stimulant and a diuretic, accelerates childbirth, and strengthens the heart, but high doses of it are poisonous.<sup>1404</sup>

**TAI:** Physicians, geographers and writers of the 9th and 10th centuries described the cultivation of the ‘jadī’, one of the Arabic names for saffron,<sup>1405</sup> which could be found in the al-Shām region, especially the village of Jadiyah located in present-day Syria.<sup>1406</sup> Al-Bīrūnī states that Damascus was one of the centre for the supply of ‘za‘farān’ in the area, and he notes its medicinal uses.<sup>1407</sup> Cultivated saffron was imported into the region during the Middle Ages from southern Europe. ‘Za‘farān’ (*zafferano*) is listed among the products which residents of Italian cities traded in Acre, Beirut, and Ramlah during the 13th and 14th centuries.<sup>1408</sup> According to many 11th-century Genizah fragments saffron was an important commodity traded by land and sea between Cairo, Alexandria, Sicily, Mahadiyah, Qayrawān, Būṣīr, and the Maghreb.<sup>1409</sup> It seems that the Maghreb, mainly Tunisia,<sup>1410</sup> was one of the most important suppliers of saffron (BM Or 5566 A III), which was exported to the east.<sup>1411</sup> Two parts of a story about Baghdad found in a Genizah fragment describe saffron as the source of the wealth of the city (T-S Ar.48.121II).<sup>1412</sup>

## Sal-ammoniac

NH<sub>4</sub>Cl, **A: Nushādūr, nushādūr, wa’id**

**D & H:** Two different but similar substances shared names in the medieval period: ammonia salts (inorganic material, probably NH<sub>4</sub>Cl), usually called *nushādūr* in Arabic, and ammoniacum, which was produced

<sup>1404</sup> al-Qazwini, p. 250.

<sup>1405</sup> Maimonides, Glossaire, p. 47, no. 135.

<sup>1406</sup> For example: Yaqut, II, p. 5; al-Ya‘qubi, p. 324.

<sup>1407</sup> al-Biruni, I, p. 95.

<sup>1408</sup> Pegolotti, pp. 64, 69, 90, 101; Ashtor, Levant, p. 52, n. 134; Heyd, II, pp. 668–669.

<sup>1409</sup> Gil, Kingdom, IV, p. 929–930—saffron is mentioned in more than fifty fragments in the index. Ben-Sasson, p. 679 refer to thirty documents. Goitein, Society, I, pp. 153–155, 173, 200, II, p. 78, 235.

<sup>1410</sup> Goitein, Society, I, p. 153.

<sup>1411</sup> Goitein, Society, I, p. 154.

<sup>1412</sup> Gil, Kingdom, IV, p. 209.

from a vegetable source (*Dorema ammoniacum*) and was usually called *wushshaq* in Arabic (see Part B, chapter 5).

**PU:** Sal-ammoniac figures in 3 lists of *materia medica* (T-S Ar.30.274; T-S Ar.39.450; T-S AS 145.365) and in 3 prescriptions: for eye diseases (T-S Ar.42.60) and for unknown uses (fresh, T-S Or.1081.J.39; stone, T-S AS 169.297).

**TU:** Sal-ammoniac is mentioned in medical books in several recipes: for entropion and roughness of the eyelids (T-S Ar.39.167) and as a simple in lexica of *materia medica* (T-S Ar.35.327; T-S AS 145.365r). It is also mentioned in recipes for unknown uses (T-S AS 179.259), one of which (preparation of ointment) is based on pigeon fat and includes substances such as mercury, Jew's stone, and sulphur (T-S Ar.40.133), and another is for external uses (sugar mixed with sal-ammoniac and wrapped in a woollen cloth; T-S AS 180.33). White sal-ammoniac was used in a preparation for unknown uses (T-S Ar.40.57). Sal-ammoniac is also mentioned in quasi-medical alchemical preparations (T-S 16.270r; T-S AS 165.79; T-S AS 176.316; alchemical astrological, T-S 8J14.3 [5]).<sup>1413</sup>

**OMU:** The inorganic substance was used to treat eye diseases and diphtheria.<sup>1414</sup>

**TAI:** Ammonia 'nushādūr' was an important commodity traded in the Mediterranean region (most of the sources are from the 11th century). It was a product of Egypt that was traded in between the cities of Cairo, Alexandria, Qayrawān, Mahadiyya, Būṣīr, Mazara, Susa, Tripoli (Libya), Ramlah, Ladakia (Syria), and Sicily.<sup>1415</sup> Ammonia salt was also produced from the volcanoes in Sicily and exported to Spain and Egypt.<sup>1416</sup>

## Salt

Halite, Natrium chloridum, Sales, NaCl, **A:** **milh**<sup>1417</sup>

**D&H:** Cooking salt is the accepted term for sodium chloride. The substance is crystallized, transparent, and its powdered form is white. Cooking salt appears in the region mainly in the area of the Dead Sea,

<sup>1413</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1414</sup> Amar & Buchman, p. 215.

<sup>1415</sup> Goitein, Society, I, pp. 228–229, 337, and more. Gil, Kingdom, I, pp. 688–689, IV, p. 931: 50 documents on ammonia and its trade. Ben-Sasson, p. 76: 30 documents on ammonia and its trade.

<sup>1416</sup> Gil, Kingdom, I, p. 560.

<sup>1417</sup> Maimonides, Glossaire, no. 221.

in the sea itself and in the layers of salt that form Mount Sodom. Salt production today, as in the past, is by two methods: mining or evaporating sea water.<sup>1418</sup> The importance of salt for human beings is great physiologically, as an element in their food, and also for the customs and rites in various religions. The prophet Elisha, for example, used salt to 'heal' the waters of Jericho (II Kings 2:19–22). From the Bible one learns that salt was also used to prepare the sacrifices (Leviticus 2:13), and was therefore included among the provisions used in the Temple. The Sages recognized the qualities of salt and sometimes regarded it as 'a kind of curse' (Jer. Talmud, Erubin, 3a) because 'too much of it is bad', 'a little is good' (Jer. Talmud, Berakhot, 34a), and it ensured the health of the body (e.g., Jer. Talmud, Berakhot, 40a). The Sages distinguished between Sodomite salt originating in the Dead Sea, which was used as a component of incense (Jer. Talmud, Kritot, 6a), and salt crystals mined from the rocks of Mount Sodom (Jer. Talmud, Bezah, 39a).<sup>1419</sup> In Judaism salt features in many customs, such as dipping bread in salt before reciting the blessing over it, customs associated with the Passover Seder, and making meat ritually fit (kosher). Salt was used in various cultures even to conclude a covenant (Ezra 4:14). The custom of washing a woman and baby and cleansing with salt after childbirth is mentioned in the Book of Ezekiel (16:4.). The need for salt as part of food began with the rise of agriculture, because until then people obtained the salt they required from the flesh of wild animals that they ate.<sup>1420</sup> Dioscorides describes the extensive use of *Hales* (salt), *halos anthos* (soda) and *Nitron* (natural soda).<sup>1421</sup>

**PU:** Different kinds of salt figure in 10 lists of *materia medica* (T-S Ar.30.291; T-S Ar.35.328; T-S Ar.35.344; T-S Ar.35.388; T-S Ar.39.451; T-S AS 177.227; T-S NS 164.12; T-S NS 305.38; *azrār*, T-S Ar.39.307; *naftī*, T-S Ar.39.451) and in 16 prescriptions: for cleaning or treating the teeth (*hindī*, T-S Ar.39.451), stomach and digestion (T-S AS 180.15), eye diseases (*hindī*, T-S Ar.42.60), and as a purgative (*naftī*, T-S Ar.41.72; T-S Ar.39.458). It is also mentioned in prescriptions for unknown uses (T-S AS 177.40 [compound]; T-S AS 179.259; T-S AS 182.167; T-S AS

<sup>1418</sup> *HE*, XXIII, pp. 582–586; Mazor, pp. 338–340.

<sup>1419</sup> More on salt in the Talmud is given in Amar, *Substances*, pp. 56–57.

<sup>1420</sup> *HE*, XXIII, pp. 585–586. On the history of salt in human history see Bergman, pp. 4–5. On the medical history of salt see Astrup, et al. and also Cirillo et al.

<sup>1421</sup> Dioscorides, V, 126–130.

182.179; T-S NS 306.41; *andarānī*, T-S Ar.38.29; T-S NS 151.52; T-S Or.1081.J.39; *hindī*, T-S Ar.41.81; *naftī*, T-S AS 177.417 [compound]; T-S AS 183.216).

**TU:** Salt appears in medical books in recipes for unknown uses (T-S NS 306.32; T-S AS 183.216r), as well as in quasi-medical alchemical preparations among other metals and minerals (T-S 20.20; T-S AS 176.316; T-S AS 182.288). It is also found in recipes for the treatment of eye diseases (lotion; T-S Ar.39.478), for dyeing the hair black (T-S Ar.40.121), and in a general list of simples, that also mentions such diseases as lip-pitude of the eyelids, pustules on the tongue, exophthalmoses, sciatica, toothache, stomach aches, and pains in the spleen and bladder (T-S Ar.41.45). Alkaline salt features in an alchemical formula (T-S K 25.83) and ammoniacal salt in a quasi-medical alchemical preparation (T-S Ar.44.59). Indian salt is present in prescriptions for unknown uses (T-S Ar.41.81r; T-S Ar.41.90) and for excessive lachrymation ‘due to laughing, crying, exposure to heat or cold winds’ (T-S Ar.42.5). Salt water was used against diseases affecting the eyelids (eye drops; T-S NS 222.18) and is mentioned in a recipe for unknown uses (T-S AS 177.309) and in a chemical formula citing Plato and Aristotle (T-S NS 327.81). *Andarānī* salt appears in recipes for unknown uses (T-S NS 151.52r; T-S AS 179.26), for treating eye complaints with collyria and venesection (T-S AS 179.59), and also for hypertrophy and atrophy of the canthi (treatment includes eye powder, drops, and even cautery) (T-S Ar.41.24).<sup>1422</sup>

**OMU:** al-Kindī describes the use of ‘*naftī*’ salt in medications for raising the spirits, strengthening, and against epilepsy, headaches, and phlegm.<sup>1423</sup> ‘*Darānī*’ salt was used for curing throat and ear pains, and was a component in toothpastes.<sup>1424</sup> ‘*Sibkhī*’ salt was used as medication against canker or putrefaction.<sup>1425</sup> Maimonides describes the salting of foods as ‘suitable’ for health. Salt is described as a substance that dissolves phlegm, and that serves as a component in prescriptions for weight reduction as well as a medication for poisons created in the stomach. A quotation in al-Tamīmī indicates that salt was also a component in a medication to treat diarrhoea and haemorrhoids. Salt served both as a separate medication and as one of the components in compound medications,

<sup>1422</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>1423</sup> al-Kindī, nos. 216, 217.

<sup>1424</sup> al-Kindī, nos. 63, 68, 71, 72, 77, 91, 98, 101, 105, 106, 152, 214.

<sup>1425</sup> *Ibid.*, no. 82.

including the treatment of poisonings. It was also a component in 'theriac'.<sup>1426</sup> Ibn al-Bayṭār believes that 'al-Andarānī salt' sharpens the mind, heals ordinary and ulcerated wounds, stops haemorrhages in the mouth and relieves toothache. It was also used to relieve general external pains, to reduce swellings, to soothe muscular cramps, to open obstructions, and to remove sticky mucus.<sup>1427</sup> al-Qazwīnī, in his entry 'ḥajar al-millḥ', writes that salt contains the cure for 70 diseases. It prevents mould, cleans the teeth of decay, removes excess skin, and cures skin diseases. Salt was also used as a component in medications against the stings of scorpions, bees, and centipedes, and served in the treatment of joint infections. 'Andarānī salt' strengthens the weak jaw and the mind.<sup>1428</sup> Similar medical uses are attributed to other types of salt such as 'natron'.<sup>1429</sup>

**TM:** The Jews of Yemen and Iraq made extensive use of cooking salt and other types for various medical treatments such as curing infections in the womb and reducing fever and swellings.<sup>1430</sup>

**TAI:** al-Muqaddasī describes the production of powdered salt from the Dead Sea,<sup>1431</sup> and so does al-Tamīmī who says that the origin of 'Andarānī salt' is the village of Dar'a on the eastern shore of the Dead Sea.<sup>1432</sup> From letters found in the Cairo Genizah sent by Abun ben Ṣedaqa in Jerusalem to Nahrai ben Nissim of Fustat, it may be learnt that salt was a major and vital element in Jerusalem households in the 11th century.<sup>1433</sup> A document in the state archives of Venice dated 1405 attests that the Venetians sent ships to Jaffa to import cotton and potassium (Dead Sea salt).<sup>1434</sup>

<sup>1426</sup> Maimonides, Regimen, 1:6; Maimonides, Aphorisms, 8:25; 13:44; 20:42; 21:35, 22:61, 62; Maimonides, Poisons, pp. 101–102, 114, 133. On its medical qualities Maimonides, Aphorisms, 21:75.

<sup>1427</sup> Ibn al-Baytar, al-Jami IV, pp. 163–166; Leclerc, no. 2164.

<sup>1428</sup> al-Qazwini, p. 210. Cf. al-Antaki, pp. 323–324; Ibn al-Baytar, al-Jami, IV, p. 166; Leclerc, no. 2168.

<sup>1429</sup> al-Qazwini, pp. 187–188, 210. Cf. al-Antaki, p. 324; Ibn al-Baytar, al-Jami, IV, 166; Leclerc, nos. 2165–2170.

<sup>1430</sup> Reiani, no. 181. Cf. Ben-Yakov, p. 731.

<sup>1431</sup> al-Muqaddasi, p. 184; *PPTS*, III, p. 81; Le Strange, p. 20.

<sup>1432</sup> al-Tamimi, pp. 36–37, 51–52, 162. Amar & Seri, p. 46.

<sup>1433</sup> Gil, p. 244, no. 501. Gil, Kingdom, III, p. 953, no. 580.

<sup>1434</sup> Ashtor, Trade, p. 291.



## Sarcocolla

*Astragalus sarcocolla* (Fabaceae), **A:** 'anzarūt<sup>1435</sup>

**D&H:** Perennial bush with leaves divided into a few pairs, originating in South-West Asia; it grows in Iranian-Turanian phyto-geographical zones. Its resin was used for medicine from early times. Dioscorides notes that the *Sarkokolla* is a resin from a plant that grows in Persia and resembles frankincense. Galen and Dioscorides state that it cures putrescent wounds, abscesses, and eye diseases.<sup>1436</sup> Today the resin is produced mainly in Kurdistan and is exported to India and other countries (see figure 47).<sup>1437</sup>

**PU:** Sarcocolla figures in 5 lists of *materia medica* (T-S Ar.35.366; T-S Ar.39.487; T-S AS 180.199; T-S NS 279.57; T-S NS 305.69) and in 4 prescriptions: for eye diseases (T-S Ar.44.162; T-S NS 218.21) and for unknown uses (T-S AS 142.109; T-S NS 306.48).

**TU:** Sarcocolla is mentioned in medical books in recipes for the treatment of eye complaints such as redness, itching and excessive lachrymation (kohl and collyria; T-S Ar.39.228) and eye diseases; another copied, according to Isaacs, with some variation from 'Alī b. 'Īsā's *Tadhkirat al-kaḥḥālīn* (ed. Hyderabad, p. 347; T-S NS 306.48r), for ophthalmia (eye diseases; T-S AS 142.103), eye complaints (preparation of collyria; T-S AS 147.74), and paresis and weakness of the sexual organs (aphrodisiacs; T-S AS 179.226). It also appears as a simple in lexica of *materia medica* (T-S AS 181.193) and in a recipe for unknown uses comprising a powder (T-S Ar.39.478).<sup>1438</sup>

**OMU:** al-Kindī describes the wide use of 'anzarūt' to cure skin spots, abscesses, cataract, and leprosy.<sup>1439</sup> According to Maimonides, 'sarcocolla' is a hot and dry drug.<sup>1440</sup> Al-Ghāfiqī warns against the dangers of the substance, since an excessive dose can cause blindness.<sup>1441</sup> Ibn al-Bayṭār cites classical as well as Arab physicians and lists uses such as curing and drying wounds, curing eye diseases, strengthening the intes-

<sup>1435</sup> Maimonides, Glossaire, no. 4; al-Antaki, p. 60; Issa, p. 26, no. 24; Ben-Yakov, p. 447.

<sup>1436</sup> Dioscorides, III.99. The editor identifies this with *Penaea* sp.

<sup>1437</sup> Hooper, p. 89.

<sup>1438</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1439</sup> al-Kindi, nos. 31, 33, 83, 126, 156, 157, 164, 166, 170, 173, 175.

<sup>1440</sup> Maimonides, Aphorisms, 21:69.

<sup>1441</sup> al-Ghāfiqī, p. 37. Cf. al-Biruni, II, p. 76.

tines and the hair, reducing swellings, and draining pus from the ear; also as a medication for fattening.<sup>1442</sup>

**TM:** The bright, yellowish-brown resin dissolves in water and in alcohol. This resin contains substances similar to glycyrrhizin. In Iran it was used to prepare plaster to knit bones and to cure nerve pains in the ear and face. The women of the city of Haran used it to improve the colour of their skin.<sup>1443</sup> The Jews of Iraq described many and varied uses of the resin, such as a component in an ointment to cure Jericho rose, and to treat oil nodules in the skin, epilepsy, diseases of the eyes and skin, and fractures.<sup>1444</sup> In Persia sarcocolla serves as a medicinal substance until today.<sup>1445</sup> In Egypt the substance was imported from India and Persia, and used to cure diseases of the eyes and skin, to make a plaster bandage, to ease digestion, and to stop diarrhoea; it also served as a medical disinfectant.<sup>1446</sup>

**TAI:** Sarcocolla was a commodity traded in the Middle Ages around the Mediterranean. Genizah manuscripts supply us with evidence of its commerce at Alexandria, Cairo, Qayrawān, and Palermo.<sup>1447</sup> In a letter (dated approximately 1045) found in the Genizah sent by Yitzhak ben David of Fustat to his partner Makhlof ben Azariah, the writer thanks his Jerusalem partner for the consignment of sarcocolla, and notes that the substance is not found in Egypt because there is no demand for it.<sup>1448</sup> 'Anserout' is mentioned in an Acre customs list where it is included among the merchandise to be taxed.<sup>1449</sup>

<sup>1442</sup> Ibn al-Baytar, *al-Jami*, I, pp. 63–64; Leclerc, no. 171. Cf. Ibn Sina, p. 248.

<sup>1443</sup> Hooper, p. 90; Uphof, p. 57.

<sup>1444</sup> Ben-Yakov, pp. 86, 96, 160, 163, 165, 167, 171, 265, 267, 291.

<sup>1445</sup> al-Kindi, p. 237.

<sup>1446</sup> Ducros, p. 11.

<sup>1447</sup> Goitein, *Society*, V, p. 543; Gil, *Kingdom*, I, p. 564, II, p. 345, no. 396, III, p. 864, no. 562, pp. 903–904, no. 574 and see indices.

<sup>1448</sup> Gil, III, p. 180, no. 485a.

<sup>1449</sup> Beugnot, II, 175.

### Scammony

Syrian Bindweed, *Convolvulus scammonia* (Convolvulaceae),  
**A: mahmūda**<sup>1450</sup>

**D&H:** Medicinal scammony is a perennial herb with a bare, winding stem, spear-shaped leaves, and large flowers (up to 4 cm.) which are funnel-like, of a pale yellow colour with five violet stripes along their length. The fruits are rounded capsules.<sup>1451</sup> The researcher Zilberstein believes that the name of the variety ‘scammonia’, which is retained in Arabic and in certain European languages as well, perpetuates the memory of a city called Shikmona which lies in ruins to the south of Haifa. In his view, this ancient port city may once have been a marketing centre for the scammony plant that grows in that area, whence it was sent to neighbouring countries and to Europe.<sup>1452</sup> Other researchers think that the name is linked to the sycamore tree (‘shikma’). Classical physicians considered the juice derived from the roots of the *Skammonia* a medicinal substance. Dioscorides, for example, recommends the varieties from ‘Judea and Syria’, and states that the plant is a purgative, an abortifacient, and a remedy for leprosy and headache.<sup>1453</sup> Various types of scammony were used as purgatives even in Europe. The scammony plant was imported from the region of Syria and extensive medicinal use was made of it, especially during the Middle Ages.<sup>1454</sup>

**PU:** Scammony figures in 8 lists of *materia medica* (T-S Ar.30.274; T-S Ar.34.341; T-S Ar.39.450; T-S Ar.39.451 [2]; T-S Ar.43.315; T-S Ar.43.317; T-S AS 177.9; T-S AS 181.193) and in 9 prescriptions: as an aphrodisiac (T-S NS 164.159), a purgative (T-S Ar.41.72), chewing gum (T-S Ar.42.20), and for unknown uses (T-S K25.212; T-S Ar.34.150; T-S AS 182.167; T-S NS 327.97; T-S Or.1081.J.39; T-S 13J6.14).

**TU:** Scammony is mentioned in several medical books as an ingredient in recipes for of unknown uses (T-S AS 166.126; T-S Ar.40.60; T-S Ar.40.130; T-S AS 182.303); likewise water of convovulus (T-S Ar.41.61). It is also found in a recipe for ointment to treat paralysis and abscesses,

<sup>1450</sup> Maimonides, Glossaire, p. 65, no. 207; p. 80, no. 281; Issa, p. 56, nos. 8, 21; Dinsmore & Dalman, nos. 1225–1226.

<sup>1451</sup> Plants & Animals, XI, p. 37; Feinbrun-Dothan, p. 517.

<sup>1452</sup> Zilberstein, pp. 79–80.

<sup>1453</sup> Dioscorides, IV.171.

<sup>1454</sup> Grieve, pp. 102–103; Uphof, p. 149.

and as a facial lotion (T-S AS 184.3),<sup>1455</sup> and for strengthening (T-S Ar.30.65).<sup>1456</sup>

**OMU:** According to al-Kindī, scammony is a component in a medicinal preparation to reduce fever, to calm the nerves, and to relieve pains in the stomach and liver.<sup>1457</sup> Al-Bīrūnī stresses the poisonous properties of the juice derived from the ‘*ṣqamūnyā*’ and the ‘*turbad*’.<sup>1458</sup> Ibn al-Bayṭār in his entry ‘*ṣqamūnyā*’ describes the use of the root juice to cause diarrhoea and abortion, and he states that it is a component in an ointment to cure wounds, to seal scars, and to treat headaches. Other physicians cited by him recommend mixing the root juice with other substances to diminish its harmful effects, and note its long shelf-life. They mention other uses such as curing scorpion stings, eliminating worms, and treating problems in urinating.<sup>1459</sup> Maimonides mentions several uses of the plant, but specifically emphasizes that it is a purgative substance.<sup>1460</sup> Saladino d’Ascoli states that scammony is ‘the most powerful purgative.’<sup>1461</sup> Dāwud al-Anṭākī in his entry ‘*ṣqamūnyā*’ describes the use of the plant to cure skin diseases, to open blockages, to expel worms, to cause diarrhoea, and to cure intestinal diseases, heart palpitations, and insanity.<sup>1462</sup>

**TAI:** Scammony is mentioned in Genizah fragments as a commodity traded and sold at Qayrawān, Cairo, Alexandria, Mahdiyya, and the Maghreb.<sup>1463</sup> Ibn al-Bayṭār notes in his entry ‘*ṣqamūniyā*’ that he has seen the plant in the region of al-Shām and in Falasṭīn.<sup>1464</sup> Al-Dimashqī counts ‘*ṣqamūniyā*’ among the 90 varieties found in Mount Lebanon from the harvesting of which one could earn a living.<sup>1465</sup> Evidence of trade in scammony in the Land of Israel in the Middle Ages can be found in Italian trading documents dated to 1481 which describe the purchase of the plants sent to Italy.<sup>1466</sup> Rabbi Moshe Bassola, who visited

<sup>1455</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>1456</sup> Goitein, *Society*, II, p. 267.

<sup>1457</sup> al-Kindī, p. 113.

<sup>1458</sup> al-Bīrūnī, II, pp. 58, 82.

<sup>1459</sup> Ibn al-Bayṭār, *al-Jamī*, III, pp. 17–119; Leclerc, no. 1193. Cf. al-Antakī, pp. 193–194.

<sup>1460</sup> For example: Maimonides, *Aphorisms*, 13:3; 21:80; Maimonides, *Regimen*, 2:6; Maimonides, *Asthma*, 9:9; 12:9.

<sup>1461</sup> Saladino, p. 89.

<sup>1462</sup> al-Antakī, pp. 193–194, and the entry ‘*turbid*’, p. 91.

<sup>1463</sup> Gil, *Kingdom*, II, p. 304, no. 110, p. 309, no. 112, p. 489, no. 167; Gil, IV, p. 930, mentioned in ten documents; Goitein, *Society*, I, p. 184, no. 200, II, pp. 267, 584.

<sup>1464</sup> Ibn al-Bayṭār, *al-Jamī*, III, pp. 17–19; Leclerc, no. 1193.

<sup>1465</sup> al-Dimashqī, p. 199.

<sup>1466</sup> Details in Ashtor, *Trade*, p. 299.

the Land of Israel in 1521, mentions ‘skalmonia’—a kind of medication sold in Safed, ‘a city where many Jews deal in spices.’<sup>1467</sup> Frederick Hasselquist relates that he saw the plants grown in the valley between Haifa and Nazareth (the Jezreel Valley).<sup>1468</sup> Juice extracted from the root of the plant was used as a purgative and was exported from Syria to Europe even in modern times.<sup>1469</sup>

## Scoria

### A: tūbāl

**D&H:** Scoria is a metallic alloy of copper.<sup>1470</sup> It is described by Dioscorides as ‘scales of copper’; among its medical applications he includes treatment of eye diseases.<sup>1471</sup>

**PU:** Scoria figures in 2 lists of *materia medica* (T-S NS 305.69; T-S NS 305.69) and in 4 prescriptions: for eye diseases (T-S AS 161.23; T-S NS 218.21) and for unknown uses (T-S Ar.41.81; T-S NS 297.17).

**TU:** Scoria is mentioned in medical books in recipes for dental treatment, oral hygiene, and treatment for the loss of teeth (T-S NS 306.73), for ear drops, wounds, to stop excessive lachrymation and loss of teeth (T-S Ar.43.226; T-S NS 90.28; T-S NS 306.73). It also appears in medical books on ophthalmology (T-S Ar.40.145; T-S Ar.42.21; T-S Ar.42.68; T-S Ar.43.101; T-S AS 179.59), *materia medica* (T-S Ar.41.37) and in other fragments (T-S Ar.38.124; T-S NS 297.39; T-S NS 297.232).<sup>1472</sup>

## Sebesten

Assyrian Plum, *Cordia myxia* (Boraginaceae), **A: sabistān**<sup>1473</sup>

**D&H:** Tall tree or bush with big leaves and juicy fruits, which contain viscous and sticky material. Some medieval commentators as well as researchers today identify ‘gufnan’ in the Mishna (Demai, 1:1) with the

<sup>1467</sup> Ya’ari, *Travels*, p. 138.

<sup>1468</sup> Hasselquist, p. 300.

<sup>1469</sup> Uphof, p. 149.

<sup>1470</sup> For the production process see Ibn al-Baytar, *al-Jami*, I, p. 145, and Maimonides, *Glossaire*, no. 385.

<sup>1471</sup> Dioscorides, V.89.

<sup>1472</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>1473</sup> Maimonides, *Glossaire*, no. 264; Issa, p. 57, no. 20.

Assyrian plum, namely 'sebesten'.<sup>1474</sup> Other researchers assume that the Assyrian plum is a cultivated tree, apparently originating in India, which was brought into the region by the Arabs.<sup>1475</sup> According to historical and archaeological sources, the tree grew in the Land of Israel in the Middle Ages (see figure 48).<sup>1476</sup>

**PU:** Sebesten figures in 4 lists of *materia medica* (T-S Ar.30.274; T-S Ar.39.451 [3]; T-S AS 182.222; T-S AS 184.234) and in 4 prescriptions: for diet (T-S Ar.41.71) and for unknown uses (T-S Ar.40.141; T-S NS 327.97; T-S 12.33).

**TU:** Sebesten is mentioned medical books on inflammation (T-S Ar.44.91) and *materia medica* (T-S Ar.44.193), and in pharmacopoeias (T-S Ar.40.91; T-S NS 222.43).<sup>1477</sup>

**OMU:** Al-Kindī reports on the use of the substance to prepare an ointment to strengthen the stomach and the liver, and to raise the patient's morale.<sup>1478</sup> Maimonides recommends sebesten to make a milk purgative and a medicine to treat malaria.<sup>1479</sup> The plant is listed among the dry drugs that are neither cold nor hot.<sup>1480</sup> Ibn al-Bayṭār cites various Arab physicians who recommend the use of the fruit skin as an astringent and to prepare purgative medications with the aim of moderating their effect. The tree also provides medication to treat malaria.<sup>1481</sup>

**TM:** The juicy fruit is large and full of rubbery and sticky substances. Iran exports large quantities of the fruit for medical purposes. The fruit contains soothing properties that relieve pains, and serves in Iraq and Iran to treat cough, chest problems, and the urinary tract.<sup>1482</sup> In Egypt and Syria the tree is used to cause diarrhoea and to treat infections in the respiratory tract.<sup>1483</sup>

**TAI:** In archaeological excavations conducted in Ashkelon in 1985, carbonized stones of the Assyrian plum were discovered and dated to the 8th–10th centuries. These findings indicate the cultivation of the Assyrian plums, from the fruits of which glue was prepared for bird

<sup>1474</sup> Estori ha-Parhi, p. 527; Maimonides, Glossaire, p. 264; Low, I, pp. 296–297; Feliks, Fruit Trees, pp. 260–262.

<sup>1475</sup> Hooper, pp. 105–106.

<sup>1476</sup> On the tree, its identification, and historical references see Hutchinson; Kislev.

<sup>1477</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1478</sup> al-Kindi, no. 3.

<sup>1479</sup> Maimonides, Asthma, 9:3; 12:1.

<sup>1480</sup> Maimonides, Aphorisms, 21:68. Cf. al-Antaki, p. 186.

<sup>1481</sup> Ibn al-Baytar, al-Jami, III, p. 4; Leclerc, no. 1157.

<sup>1482</sup> Hooper, p. 106; Uphof, p. 152; al-Rawi & Chaakravarty, p. 30.

<sup>1483</sup> al-Kindi, p. 279, no. 138.

catching, apparently being a source of livelihood for the inhabitants of the region.<sup>1484</sup> In a trade document from the Genizah that was sent from Jerusalem to Fustat in 1065, there is mention of products purchased in Jerusalem for export.<sup>1485</sup> In another letter from Sicily to Cairo (12th century) it is mentioned as well.<sup>1486</sup> The traveller Rauwolf (1573) mentions the fruit of the sebesten which could be found in the shops of the pharmacists in Tripoli under that name.<sup>1487</sup> Hasselquist mentions the Assyrian plum that grew in Sidon. The fruits of the tree served to prepare glue for bird catching. According to him, the tree grew wild in the Land of Israel.<sup>1488</sup> Its use for making glue was widespread in the Land of Israel even in recent generations.<sup>1489</sup>

### Sedge

Cocoglass, coconut grass, *Cyperus longus* (Cyperaceae),<sup>1490</sup> **A: su'd**<sup>1491</sup>

**D&H:** Rhizomatous, grass-like cosmopolitan plant of damp places and considered one of the world's invasive weeds. According to classical physicians such as Dioscorides, the *Kupeiros*, identified with the tuberous papyrus reed, was a diuretic substance that was used to treat, among other things, kidney stones and gynaecological problems, and was also effective in stimulating menstruation.<sup>1492</sup>

**PU:** Sedge figures in 5 lists of *materia medica* (T-S Ar.35.137; T-S Ar.39.450; T-S Ar.39.487; T-S NS 264.80; *qarfī*, T-S AS 184.234) and in 4 prescriptions: for stomach ailments (T-S NS 297.216), cleaning or treating the teeth (T-S Ar.39.451 [*hūfī*]), and unknown uses (T-S Ar.43.338; T-S AS 173.3; T-S NS 327.40).

**TU:** Sedge is mentioned in medical books in recipes for palpitation, theriac, purgatives, indigestion, haemorrhoids, looseness of the bowels, stomach ailments, colic, emmenagogues, abortifacients, and against loss

<sup>1484</sup> On the tree in the sources and on this branch of economy in the Land of Israel and the region, see in detail Kislev.

<sup>1485</sup> Gil, III, p. 245, no. 501. Various uses were made of all the products, including medical use.

<sup>1486</sup> Gil, Kingdom, II, p. 462, no. 191.

<sup>1487</sup> Rauwolf, p. 24.

<sup>1488</sup> Hasselquist, p. 164.

<sup>1489</sup> Post, II, 123.

<sup>1490</sup> Issa, p. 66, no. 8.

<sup>1491</sup> Description: Zohary, p. 641; Feinbrun-Dothan, p. 913; Maimonides, Glossaire, no. 274; Serapion, no. 433; Issa, no. 66, no. 14.

<sup>1492</sup> Dioscorides, I, I. 4.

of teeth (T-S Ar.42.299; T-S Ar.45.28; T-S Ar.45.30; T-S NS 306.73); the treatment of cold and cough (T-S Ar.11.11), stones in the bladder (T-S K14.18), diarrhoea (powder; T-S Ar.40.179r), loss of teeth (T-S NS 306.73r), and unknown uses (embrocation; T-S AS 168.190). It is also mentioned in general medical books (T-S Ar.39.95; T-S Ar.40.179) and in books on inflammation (T-S Ar.44.91) and palpitation (T-S Ar.44.148; T-S Ar.44.149), in pharmacopoeias (T-S Ar.41.114; T-S AS 184.234; T-S Or.1080.3.39; T-S Or.1081.1.6), and in other fragments (T-S Ar.38.76; T-S Ar.41.152; T-S NS 297.48).<sup>1493</sup>

**OMU:** According to the physician Assaf, sedge is a medication against scorpion stings and is also effective in stimulating menstruation and treating diseases of the mouth.<sup>1494</sup> Al-Kindī mentions sedge as a component in a medication to treat cancer, stomach ulcers, and rotten teeth. The plant was also used in toothpaste and to sweeten the breath.<sup>1495</sup> Maimonides reports the use of the sedge as a medication to ‘eliminate desire for coitus’, to dissolve stones in the urinary tract, and to open obstructions. He says that it is a hot and dry drug.<sup>1496</sup> Ibn al-Bayṭār and Dāwud al-Antākī describe similar uses.<sup>1497</sup>

**TM:** The tubers of sedge were used in Iran and Iraq to repel insects from clothes and to clean the teeth,<sup>1498</sup> and also for the perfume industry (from ancient times).<sup>1499</sup> In Iraq and Iran the tubers, which have a good scent (like hale or lemon), were used to improve the smell, to soothe, to constrict, and to treat stomach problems. In Egypt the plant was used as a digestive drug and to quicken menstruation.<sup>1500</sup> The Jews of Iraq used sedge in medications for the treatment, among other things, of infections of the bronchial tubes, diabetes, constipation, gases, dysentery, and stones in the urinary tract. The researcher Ben-Yakov tends to identify it with the long papyrus reed.<sup>1501</sup>

**TAI:** Ibn al-Bayṭār states that he saw sedge in many areas of the world, mainly Sicily and Greater Syria.<sup>1502</sup>

<sup>1493</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>1494</sup> Assaph, IV, 391.

<sup>1495</sup> al-Kindi, nos. 3, 74, 106. Cf. Ibn Sina, p. 378; al-Biruni, II, p. 96.

<sup>1496</sup> Maimonides, Aphorisms, 21:69; 22: 66; Maimonides, Sexual, 5:4.

<sup>1497</sup> Ibn al-Baytar, al-Jami, III, pp. 10–11; Leclerc, no. 1186; al-Antaki, p. 188.

<sup>1498</sup> Hooper, p. 112.

<sup>1499</sup> Uphof, p. 169.

<sup>1500</sup> Hooper, p. 112; al-Kindi, p. 282, no. 143; al-Rawi & Chaakravarty, p. 35, with contents of active substances.

<sup>1501</sup> Ben-Yakov, pp. 103, 106, 119, 245, 311, 330, 347.

<sup>1502</sup> Ibn al-Baytar, al-Jami, III, pp. 10–11; Leclerc, no. 1186.



## Sesame

Oriental Sesame, *Sesamum indicum* (*orientale*) (Pedaliaceae), **A: simsim, shiraj** [oil], **ṭahīna** [tehina]<sup>1503</sup>

**D&H:** Erect annual (2 m.), with lance-shaped oval leaves, white-pink flowers, and oblong seed capsules bearing many small grey seeds.<sup>1504</sup> Sesame is listed among the first oil crops in history. The quality of its oil is high, and Babylonian medicine used it to treat swellings, skin diseases, and limb muscles.<sup>1505</sup> Dioscorides reports on the use of the *Sesamon* to cure the nerves, fractures, ears, eyes, headaches, lung infection, stomach ulcers, thigh pains, and leprosy.<sup>1506</sup> The plant was an agricultural crop in the Land of Israel in the Mishna and Talmud periods and is frequently mentioned in rabbinical sources.<sup>1507</sup>

**PU:** Sesame and its products figure in 11 lists of *materia medica* (T-S NS 224.65; T-S NS 306.117; T-S AS 184.34; oil, T-S Ar.30.274; T-S Ar.39.136; T-S AS 214.96; T-S NS 224.65; T-S NS 305.69; T-S NS 306.117 [2]; tehina, T-S NS 306.117; T-S AS 177.227) and in 10 prescriptions: as a plaster (oil, T-S NS 222.34) and for unknown uses (T-S Ar.35.59; T-S NS 265.62; T-S NS 327.97; oil, T-S AS 177.39; T-S AS 214.96; T-S AS 169.297 [ointment]; T-S AS 177.422; T-S Or.1080.1.87; tehina, T-S AS 214.96).

**TU:** Sesame oil is mentioned in medical books in recipes for the treatment of stomach complaints (T-S Ar.39.161), children with umbilical hernia and incessant crying (T-S Ar.40.160), convulsion and tetany, fevers, and colic (T-S Ar.40.162), inflammatory swellings of the breast (beginning of a chapter numbered 15 of an unknown book; T-S AR. 40.171), and for deafness, earache and throbbing headache (T-S AS 180.135v). It is also recorded as a simple in lexica of *materia medica* (T-S Ar.39.199; T-S NS 306.115) and in recipes for unknown uses (T-S AS 178.225), one being a preparation of ointment based on pigeon fat (T-S Ar.40.133); another was probably written by the anonymous pharmacist known as al-Dimashqī ('the Damascene'; T-S Ar.39.65). Sesame is mentioned in a

<sup>1503</sup> Maimonides, Glossaire, nos. 100, 268; al-Biruni, I, p. 191; Dinsmore & Dalman, no. 1330; Issa, p. 168, no. 1.

<sup>1504</sup> Chevallier, p. 268.

<sup>1505</sup> Plants & Animals, XII, p. 38; Levey, Chemistry, pp. 87, 91, 127, 173.

<sup>1506</sup> Dioscorides, II.121.

<sup>1507</sup> Low, III, pp. 1–11; Feliks, Plants, p. 157; Feliks, Yerushalmi, II, 447–456.

recipe for unknown uses copied from Ibn Sīnā's *al-Qānūn* (cf. ed. Bulaq, III, 302–3; T-S Ar.41.96).<sup>1508</sup>

**OMU:** Al-Kindī used sesame to treat many diseases including leprosy and lung infection. Sesame oil was used to treat abscesses, toothaches, cough, and insanity.<sup>1509</sup> Ibn Sīnā lists similar uses.<sup>1510</sup> Shabbetai Donolo reports on the use of sesame oil in a process to prepare medications for dissolving resins.<sup>1511</sup> According to Maimonides, sesame is a good drug that 'refreshes the brain and the spinal cord, causes bad breath, smelly sweat, makes women barren, and loosens the stomach'. Sesame oil was a component in a medication to treat haemorrhoids and in a medication to 'benefit coitus, to increase semen, to increase flesh, and to aid in coital activity'.<sup>1512</sup> Ibn al-Bayṭār describes the plant, its products, and their medical uses by the physicians of the period.<sup>1513</sup>

**TM:** The purified oil serves as food, to help in cooking, and to prepare cosmetic products and soap. The seeds are used to prepare halva and confectionary, and for baking. The seed pod is rich in protein—40%, and constitutes food for animals.<sup>1514</sup> Yemenite Jews made medical use of the seeds to regulate bowel movement and to increase virility. The oil derived from the seeds served to prepare medical creams and was a substitute for olive oil.<sup>1515</sup> The Jews of Iraq used sesame seeds to prepare a medication to increase semen, to strengthen virility, and to treat skin disease, insomnia, and insanity.<sup>1516</sup> The plant is an important summer crop in Iran and Iraq. The oil is used there as a medicinal substance and the seed pod as a softening drug.<sup>1517</sup> In Egypt, sesame helps to create milk for breastfeeding, to accelerate menstruation, to cause miscarriages, and to treat problems of the stomach, the nerves, abscesses, and the skin.<sup>1518</sup> The oil is noted for its high content of linolenic acid and of Sesamol. The oil is scentless and does not easily spoil. The seeds contain 45%–55% oil, 20% protein, and a high percentage of the important

<sup>1508</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1509</sup> al-Kindi, nos. 44, 63, 112, 118, 119, 137, 139, 145, 146, 149, 194, 205, 215.

<sup>1510</sup> Ibn Sina, p. 392.

<sup>1511</sup> Donolo, p. 17, n. 130.

<sup>1512</sup> Maimonides, Aphorisms, 20:50, 80; 21: 72; 22:62; Maimonides, Sexual, Introduction 7.

<sup>1513</sup> Leclerc, nos. 499, 963, 1066, 1218; al-Antaki, p. 198.

<sup>1514</sup> Plants & Animals, XII, p. 38; Hill, pp. 198–199; Uphof, p. 481.

<sup>1515</sup> Reiani, no. 110.

<sup>1516</sup> Ben-Yakov, pp. 148, 150, 198, 217, 225, 299, 315.

<sup>1517</sup> Hooper, p. 171.

<sup>1518</sup> Ducros, p. 129.

amino acids. The leaves, which contain a mucinous substance, serve as a medication for diarrhoea and for problems of the bladder and kidneys, as well as to rinse the eyes and treat skin problems. The oil serves as a mild purgative.<sup>1519</sup>

**TAI:** There is very little evidence of the cultivation of sesame in Levant during the early Islamic period. The references increase from the Crusader period onwards, mainly from Mamluk times, and they indicate its use for agriculture, for its extracted oil, for its products (tehina), and for trading purposes.<sup>1520</sup> Al-Tamīmī notes that the inhabitants of the Land of Israel—both Christians and Muslims—fried vegetables and fish in sesame oil.<sup>1521</sup> Rabbi Moshe Poriat relates that ‘shemen samsemin’ is found in Jerusalem, and it is ‘good and cheap’.<sup>1522</sup> Sesame, sesame oil, and tehina appear in a few Genizah documents as food and a merchandise.<sup>1523</sup>

## Sorrel

Dock, *Rumex sp.* (Polygonaceae), **A:** **ḥummād**<sup>1524</sup>

**D&H:** Slender low-growing perennials with arrow-shaped leaves and terminal spikes bearing small flowers.<sup>1525</sup> The name originates from rumex acid, found in the stems and leaves. The source of the names in Hebrew and Arabic is Aramaic, and its meaning is associated with the bitter taste of the stems and leaves.<sup>1526</sup> Dioscorides describes *Lapathon* and *Hippola*, identified with species of the sorrel, and notes that they are used to treat problems of the stomach and intestines, scorpion stings, toothache, and earache, to accelerate menstruation, to remove stones from the urinary tract, and to cure dysentery.<sup>1527</sup>

<sup>1519</sup> Loewenfeld & Back, p. 233; Plants & Animals, XII, p. 38.

<sup>1520</sup> Amar, Production, pp. 280–282.

<sup>1521</sup> In: Ibn al-Baytar, al-Jami, III, p. 129.

<sup>1522</sup> Ya’ari, Travels, p. 278. Additional sources for this period in: Amar, Production, pp. 280–282.

<sup>1523</sup> Gil, Kingdom, IV, p. 544, no. 778; Goitein, Society, I, p. 155, IV, pp. 230–232, 245, 252.

<sup>1524</sup> Maimonides, Glossaire, no. 150; Issa, p. 158. Additional names are in Leclerc, nos. 402, 699, 793, 1208, 1515; Serapion, no. 273; Dinsmore & Dalman, no. 1515; Crowfoot & Baldensperger, p. 39.

<sup>1525</sup> Chevallier, p. 262.

<sup>1526</sup> Zohary, p. 361.

<sup>1527</sup> Dioscorides, II.140–141.

**PU:** Sorrel figures in 3 lists of *materia medica* (T-S Ar.30.274; T-S NS 306.117; seeds, T-S Ar.34.341) and in 3 prescriptions: for face and eye (T-S Ar.35.363) and unknown uses (T-S AS 152.34; T-S AS 177.417 [compound]).

**TU:** Sorrel features in recipes for strengthening the stomach and stopping diarrhoea resulting from weakness of the liver (T-S Ar.40.51), as an aphrodisiac, and combating wet dreams (T-S NS 164.194). It also appears as a simple in lexica of *materia medica* (T-S NS 164.12; T-S AS 159.67).<sup>1528</sup>

**OMU:** According to Maimonides, the liquid made of sorrel is a component in a medication that causes 'the elimination of sexual desire'. Elsewhere he states that sorrel leaves cause diarrhoea, but it has 'seeds that constipate the stomach.'<sup>1529</sup> Ibn al-Bayṭār describes the plant and mentions additional medical uses.<sup>1530</sup>

**TM:** The roots of many species around the world (in Europe, Asia, America, and New Zealand) are used in the framework of TM as a diuretic substance, a strengthener, to reduce fever, as a purgative, and to relieve throat pains. The species *Rumex nepalensis* serves as a substitute for rhubarb.<sup>1531</sup> In Iraq and Iran the fruits of five different species of sorrel were used to treat dysentery and gonorrhoea.<sup>1532</sup> Many varieties of sorrel were used in Europe for food and for curative purposes.<sup>1533</sup> Various sorrel species were cultivated plants, and the leaves of wild grown species were edible.<sup>1534</sup>

## Spikenard

Nard, Nardus Root, Musk Root, Indian Spikenard, *Nardostachys jatamansi* (Valerianaceae), **A: sunbul, nardin, nard**<sup>1535</sup>

<sup>1528</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1529</sup> Maimonides, Sexual, 5:5; Maimonides, Aphorisms, 21:29; Maimonides, Regimen, 2:7; 3:12. Cf. al-Biruni, I, p. 130.

<sup>1530</sup> Ibn al-Baytar, al-Jami, II, pp. 32–33; Leclerc, no. 698; al-Antaki, pp. 128–129.

<sup>1531</sup> Uphof, p. 460.

<sup>1532</sup> Hooper, p. 167; al-Rawi & Chaakravarty, pp. 83–84, with contents of active substances.

<sup>1533</sup> Grieve, pp. 358–260; 750–752.

<sup>1534</sup> Zohary, p. 361; Plants & Animals, X, p. 43; Dafni, Edible, pp. 44–46; Crowfoot & Baldensperger, p. 39; Uphof, pp. 460–461.

<sup>1535</sup> Additional names are in Maimonides, Glossaire, no. 265; Issa, p. 123, no. 9.

**Identification:** The identification of the plant according to its Arabic names above is accepted by most researchers. But Levey distinguishes ‘nardīn’, identified with *Valeriana celtica*,<sup>1536</sup> from ‘sunbul’, identified with *Nardostachys jatamansi*.<sup>1537</sup> Chizik maintains that ‘nard’ is a general term accepted in the past, and it includes different roots giving scent of various names according to their country of origin.<sup>1538</sup>

**D&H:** Small perennial, with elongated, very fragrant roots and aromatic stem (see figure 49).<sup>1539</sup> The plant and its uses appear in the Bible as scent-enhancing (Song of Songs 1:12) and as one of the perfumed spices (Song of Songs 4:14). The use of this plant was widespread among classical physicians as well. Pliny describes ‘balsam spikenard’ and also different species of spikenard used for curative purposes (to cure the eyes, to induce sleep, to improve the smell, and to cause urination). Dioscorides, in his entry *Nardos*, describes spikenard and sets out its medical uses: aromatic treatment of nausea, stomach problems, and eye diseases, and for immunization. Other species of *Nardos* were identified with species of *Valeriana*.<sup>1540</sup> The Sages mention ‘shibbolet nard’ (spikenard), one of the spices in incense (Bab. Talmud, Kritot, 6a). The oil produced from the roots was an expensive product and was used as a fragrant scent.

**PU:** Different kinds of spikenard figure in 13 lists of *materia medica* (T-S Ar.35.252; T-S Ar.35.327; T-S Ar.35.366; T-S Ar.39.139; T-S AS 176.151; T-S AS 177.200; T-S AS 182.233; T-S AS 183.159; T-S AS 184.187; T-S AS 184.234; T-S AS 184.321; T-S NS 306.106; T-S Or.1081 J.71) and in 19 prescriptions: for eye diseases (T-S Ar.44.162; red, T-S Ar.44.162) and for unknown uses (T-S Ar.34.305; T-S AS 148.27; T-S AS 151.225; T-S AS 173.3; T-S AS 177.31; T-S AS 177.40 [compound]; T-S AS 177.417 [compound]; T-S AS 177.422; T-S AS 182.167; T-S AS 182.242; T-S NS 297.17; T-S NS J38; *ṭib*, T-S Ar.30.291; T-S Ar.43.338; T-S Ar.43.338; Indian, T-S Ar.34.305; T-S Ar.42.152).

**TU:** Spikenard is mentioned in medical books in recipes for the treatment of inflamed eyelids and entropion (eye lotion; T-S Ar.39.191), jaundice with acute fever and palpitation (T-S NS 305.116), loss of teeth (T-S NS 306.73), and the intestines (T-S AS 178.310); and at the beginning of medical work opening with basmalah and referring to the sayings of the sages. The text starts with a recipe for cleansing facial skin and

<sup>1536</sup> al-Kindi, p. 338, no. 301.

<sup>1537</sup> Ibid., p. 286, no. 155.

<sup>1538</sup> A description of the plants and their uses is in Chizik, pp. 524–530.

<sup>1539</sup> Bown, p. 164.

<sup>1540</sup> Dioscorides, I.6, 7, 8.

resolving puffiness under the eyelids, tetter, and ulcerated scabs. Olive oil, garlic, mustard, nard and lard are also mentioned (T-S AS 180.231r). It also appears as a simple in lexica of *materia medica* (T-S Ar.35.366r; T-S Ar.40.60) and in recipes for unknown uses (T-S Ar.41.81r; T-S Ar.41.90; T-S NS 222.26), one of which is copied, according to Isaacs, from al-Kindī's *Kitāb kīmiyā al-ʿiṭr* (the book of the chemistry of perfume; T-S Ar.41.29) another is attributed to Galen (T-S NS 224.226r), and yet another is preparation of rubb (starting with *basmalah*; T-S AS 148.27r). It is also found as part of a potion (T-S AS 151.56v) and in advice to a patient to anoint himself with chamomile oil and nard (T-S AS 166.208r). Indian spikenard appears in a recipe for the treatment of obstruction, wind, diarrhoea, pleurisy, and trembling (T-S AS 179.110). Indian spikenard oil features in a list of *materia medica* (T-S Ar.39.369) and Roman spikenard in recipes for epilepsy, intestinal ulcer, colic, kidneys and bladder disease, and taenia of the scalp (T-S AS 179.302).<sup>1541</sup>

**OMU:** The physician Assaf describes varieties of 'nard'. In his view the plant is hot and dry, opens obstructions in the urinary tract, heats the kidneys, arouses sexual desire; it is used as a preparation against miscarriage, regulates the heartbeat, cleanses and cures the womb, relieves headache, cures eye diseases, and counteracts poisons, bites and stings.<sup>1542</sup> Al-Kindī notes the use of 'sunbul' to treat the urinary bladder and kidneys.<sup>1543</sup> Al-Bīrūnī describes various species of 'sunbul'; one of the uses of this plant was to immunize against smallpox.<sup>1544</sup> Shab-betai Donolo notes the use of the 'nard' in preparing ointments and to strengthen their effect.<sup>1545</sup> Ibn Waḥshiyya describes the use of 'nard' to treat bites and stings of venomous creatures.<sup>1546</sup> 'Nard' is also mentioned by Ibn Māsawayh, who describes the different species and notes their uses in enhancing scent as well as for curative purposes.<sup>1547</sup> Maimonides describes the use of the spikenard, which is a component in internal medications to treat haemorrhoids, to strengthen the heart, and to strengthen the stomach. It is also a substitute for cinnamon and a medication for 'cold' diseases. 'Roman spikenard' also served as a component in a medication for snakebite and the stings of venomous

<sup>1541</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1542</sup> Assaph, IV, 391–392.

<sup>1543</sup> al-Kindi, nos. 3, 32, 64, 146, 205, 213. Cf. Ibn Sina, pp. 390–391.

<sup>1544</sup> al-Biruni, II, pp. 96–97.

<sup>1545</sup> Donolo, p. 21.

<sup>1546</sup> Levey, Toxicology, p. 86.

<sup>1547</sup> Levey, Ibn Masawayh, p. 403.

creatures, and a component to strengthen sexual energy. 'Nardin oil' served as a medication against headaches and to treat abscesses in the liver.<sup>1548</sup> al-Qazwīnī describes spikenard as a very aromatic plant with a spike that sweetens the breath and releases the tongue. Additional curative properties he lists are strengthening the mind, growing hair, purifying the chest, slowing rapid heartbeat, and stopping bleeding from the womb.<sup>1549</sup> In the entry 'nardīn' he gives a synonym—'sunbul rūmī', and cites others for such uses as improving fertility and milk production in sheep, and treating stings, bites, leprosy, and skin diseases.<sup>1550</sup> Ibn al-Bayṭār in his entry 'sunbul' cites Ibn al-Sharīf to describe three species. The first is the best of them, and is also called 'sunbul al-ṭīb' or 'aṣfar'. Its properties are to heat and to constrict, and its uses are to sweeten the breath, to cause diarrhoea, to strengthen the organs, to abort foetuses, to heat internal organs, to open obstructions, to soothe chest pains, and to cure colds.<sup>1551</sup>

**TM:** The plant contains volatile ethereal oils (1% of the weight of the root stem), mainly valerianic acid which serves to treat disruptions in the nervous system and heart disease.<sup>1552</sup> Yemenite Jews used spikenard to cure putrescent wounds and to treat nausea, headaches, swellings, infections of the kidney, the liver, the eyesight, and the spleen. It also served as a diuretic, stopped excessive sweating, and cleansed the lungs and womb.<sup>1553</sup> Today Indian spikenard comes from Nepal and the Himalayas, and is used in Egypt to treat epilepsy, trembling, and hysteria.<sup>1554</sup> In India spikenard is also used to treat epilepsy, hysteria and trembling. The plant contains ethereal oils that improve hair growth and blacken it. The perfume industry also makes use of it.<sup>1555</sup>

**TAI:** Different kinds of spikenard (including red) appear in some fragments concerning trade between Alexandria, Cairo, Mahdiyya, and the Maghreb.<sup>1556</sup> 'Nardinon' appears in the lists of fine and expensive mer-

<sup>1548</sup> Maimonides, Haemorrhoids, 4:3; Maimonides, Answers, 19:3; Maimonides, Regimen, 3:9; Maimonides, Aphorisms, 9:68, 126; 17:39; 22:42, 46; Maimonides, Poisons, p. 108; Maimonides, Sexual, Introduction 17.

<sup>1549</sup> al-Qazwini, pp. 251–252.

<sup>1550</sup> Ibid., p. 262. Cf. al-Biruni, I, p. 319.

<sup>1551</sup> Ibn al-Baytar, al-Jami, III, pp. 36–38; Leclerc, no. 1237. Cf. al-Antaki, pp. 201–202.

<sup>1552</sup> Hooper, p. 143.

<sup>1553</sup> Reiani, no. 72.

<sup>1554</sup> Ducros, p. 130.

<sup>1555</sup> Uphof, p. 357. On the plant, its medical history, and the results of scientific tests of the active substances it contains, see Arora.

<sup>1556</sup> Gil, Kingdom, II, p. 684, no. 234, IV, p. 366, no. 719.

chandise that could be purchased in Acre after being transported overland from the East, beginning in the 13th century.<sup>1557</sup>

## Starch

### A: *nashā'*, *nashāstaj*

**D&H:** Fine white powder, produced from different grains, namely wheat = multi-socrus carbohydrate. Starch was used in medieval daily life by all as glue (with a little water it becomes viscous), for ironing clothes, for cooking, and as medicine. From the Sages' writings seems to have served to clean pots (Mishna, Pessahim 3:1). Dioscorides mentions the starch and its medicinal uses.<sup>1558</sup>

**PU:** Starch figures in 2 lists of *materia medica* (T-S Ar.39.136; T-S NS 306.117) and in 4 prescriptions: for eye diseases (T-S Ar.42.60), cough (T-S K25.116), and unknown uses (T-S AS 214.96; T-S AS 219.163).

**TU:** Starch is mentioned in medical books in recipes for liver ailments (T-S Ar.45.40), in some for unknown uses (T-S AS 180.171), and in a prescription booklet (T-S NS 327.90). It also appears in medical books (T-S Ar.39.115; T-S NS 305.3; T-S Ar.44.91; T-S Ar.45.45; [complaint under the armpit] T-S AS 184.343), and in books on ophthalmology (T-S Ar.43.101; T-S Ar.45.32), dentistry (T-S Ar.42.39), dermatology (T-S Ar.45.49), and *materia medica* (T-S Ar.39.273; T-S Ar.42.73; T-S Ar.44.76; T-S NS 306.115); also in pharmacopoeias (T-S Ar.11.13 [cold]; T-S Ar.44.205; T-S NS 34.16 [rabb and an electuary]; T-S NS 222.21) and other fragments (T-S Ar.38.40; T-S NS 297.229; T-S AS 182.102).<sup>1559</sup>

**OMU:** A few medieval physicians, including Ibn al-Bayṭār, describe the medical uses of starch, including treating skin diseases, cough, and diarrhoea.<sup>1560</sup>

**TAI:** Starch is mentioned in some Genizah documents on its trade, uses, and production.<sup>1561</sup>

<sup>1557</sup> Beugnot, II, 176. A description and translation of sources are in Ashtor, Levant, p. 33.

<sup>1558</sup> Dioscordes, II.123.

<sup>1559</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1560</sup> Ibn al-Baytar, al-Jami, IV, p. 180. Amar & Buchman, pp. 44, 215.

<sup>1561</sup> Goitein, Society, I, p. 154, IV, pp. 183, 412.



## Sugar Cane

*Saccharum officinarum* (Poaceae), **A: sukkar**<sup>1562</sup>

**D&H:** Sugar cane is a perennial, herbaceous plant, tall (2–4 m. or more), with multiple sections. Each stem is composed of ten sections and each plant has ten sheath-like leaves wrapped around the sections. The stem is sealed and contains the sugar substance (see figure 50). It has a panicle with small seeds, but it reproduces mainly by its shoots. The plant ripens for use after a period of eight to 24 months, most abundantly in regions where the temperature is above 20°C<sup>1563</sup> in Asia (probably India); by the 4th century BCE it was considered an important agricultural crop in India.<sup>1564</sup> Sugar is mentioned in classical sources: Strabo refers to the honey produced from Indian sugar cane; Pliny writes about sugar produced in Arabia and India and used as a remedy; Dioscorides describes *Sacharon* made from sugar cane found in India and Arabia. Among its medicinal uses, Dioscorides lists curing the stomach and intestines and relieving pains in the bladder.<sup>1565</sup> Growing sugar cane spread during the 7th century CE in the Near East in the wake of the Arab conquest. From India, the plant spread to Persia, and from there to other countries.<sup>1566</sup> Since this agricultural product was not known before the period of Islamic domination, halachic discussions arose during the period of the Geonim concerning the blessing to be said over it. Its cultivation spread to Europe (beginning in Spain) from 755 CE, but only from the 14th century onwards was it used mainly for remedial purposes. At the beginning of the 16th century, after the discovery of America, it was carried to the New World.<sup>1567</sup>

**PU:** Different kinds of sugar figure in 11 lists of *materia medica* (T-S Ar.30.274; T-S Ar.43.317; T-S NS 164.12; T-S NS 224.62; T-S NS 305.38; T-S NS 325.127; white, T-S Ar.35.229; T-S AS 169.199; *nabāt*, T-S AS 169.199; T-S AS 179.56; T-S NS 279.57) and in 30 prescriptions: for wind and colic (red, T-S NS 305.50), cleaning or treating the teeth (T-S Ar.39.451),<sup>1568</sup> treating urinary complaints (*ṭabrzād*, T-S AS 152.90);

<sup>1562</sup> Maimonides, Glossaire, p. 82, no. 289; Issa, p. 159, no. 6.

<sup>1563</sup> Plants & Animals, XII, p. 42.

<sup>1564</sup> Hill, p. 211.

<sup>1565</sup> Dioscorides, II.104.

<sup>1566</sup> Watson, Innovations, pp. 24–30.

<sup>1567</sup> Amar, Production, p. 246; Hill, p. 211. Regarding the role of Jews in the sugar trade, see Shapira, Sugar.

<sup>1568</sup> Frencken et al.

hallucination (T-S 16.291); liver (T-S Ar.39.274); fever (T-S AS 155.277); cough (T-S K25.116); swelling (plaster; T-S AS 178.32); weak eyesight and migraine (Maimonides; T-S Ar.30.286), an invalid's diet (white, T-S Ar.42.189), as an aphrodisiac (white, T-S NS 164.159), and unknown uses (T-S Ar.30.65; T-S Ar.34.150; T-S Ar.43.238 [ointment]; T-S AS 146.197 [pills]; T-S AS 182.179; T-S AS 214.96; T-S NS 97.55; T-S NS 222.34 [2] [plaster]; *bān*, T-S K25.212; *tabrzād*, T-S AS 173.3; T-S NS J38 [syrup]; white, T-S Ar.43.338; T-S NS 305.76(75); T-S 13J6.14; *nabāt*, T-S Ar.40.87 [powder]; T-S AS 182.242; T-S NS 297.17; T-S NS 222.34 [plaster]). It is also found in an alchemical astrological preparation (T-S 8J14.3).

**TU:** Sugar was an important simple in the Middle Ages, mainly in the Islamic world, and this is attested by several Genizah fragments from medical books. Sugar is mentioned in recipes for unknown uses (T-S Ar.41.90), preparing lozenges; (T-S Ar.11.13). It also appears in a diet for weight increase that is recommended for forty days (T-S Ar.40.194) and in a recipe copied, according to Isaacs, from Ibn Sīnā's *al-Qānūn* (ed. Bulaq, III:302–3; T-S Ar.41.96). Sugar candy is found in a recipe for unknown uses (T-S Ar.41.81r) and in the preparation of a potion (T-S AS 166.217). Crystalline sugar features in a lexicon of *materia medica* (T-S Ar.41.37) and in a recipe for the treatment of colic and coughs (pills; T-S NS 90.61) and recipes for unknown uses (T-S AS 180.171).<sup>1569</sup> Abū Zikrī, the physician of several Ayyubid rulers, is mentioned in a Genizah letter of 1196 CE written in Jerusalem. According to this letter, Abū Zikrī noted that sugar with the addition of almonds was a medication.<sup>1570</sup>

**OMU:** The physician Assaf calls sugar cane 'the sweet cane'.<sup>1571</sup> Al-Kindī describes the use of red sugar in a mixture for a clyster<sup>1572</sup> and of pure sugar in several medications, such as a preparation for treating sore throat, for smelling salts, in toothpaste, and in ointments and powders for the eyes to cure cataract.<sup>1573</sup> Maimonides reports the wide use of sugar as a remedy, and roasted sugar called 'sukkar roshdo'. He also describes the use of sugar in which medicinal herbs such as violets have been boiled.<sup>1574</sup> Sugar served as an ingredient of purgatives and other

<sup>1569</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1570</sup> Goitein, Jewry, p. 324.

<sup>1571</sup> Assaph, IV, 188.

<sup>1572</sup> al-Kindi, nos. 149, 215.

<sup>1573</sup> Ibid., nos. 9, 15–16, 64, 77, 91, 99, 104, 109, 115–117, 157, 175.

<sup>1574</sup> Maimonides, Regimen, 2:9; Maimonides, Aphorisms, 22:55.

preparations. It was recommended to be eaten with various foods such as almonds and raisins, and taken as a drink to strengthen the lungs.<sup>1575</sup> In his letters to the Ayyubid sultan, which dealt with other medical matters, Maimonides recommends dipping food in sugar.<sup>1576</sup> Al-Qazwīnī in his entry 'qaṣab' describes medicinal uses such as treating cough and chest pains, improving urine flow and draining mucus in the chest. A quotation from Ibn Sīnā shows that it was used to treat cough and oedema, and to improve eyesight. The ash served to slow the heartbeat, to reduce eye swellings, to strengthen the heart and to cure malaria.<sup>1577</sup>

**TAI:** In 1182 CE the general assembly of the Hospitallers instructed the head of their order in Tripoli (Lebanon) to send sugar to their main headquarters in Jerusalem for the preparation of syrups and medications for sick patients.<sup>1578</sup> During the Middle Ages sugar cane was among the most important agricultural products of the Levant shores.<sup>1579</sup> In Latin sources sugar cane is generally termed *canameles* (honey cane), and in Hebrew texts it is generally called 'kaneh sukar'.<sup>1580</sup> In the East the plant became a staple food. The sap of the plant was drawn or was purified to obtain a liquid honey or crystallized sugar. In the Middle Ages sugar cane cultivation became an important industry in the Near East.<sup>1581</sup> Al-Tamīmī reports that crystallized sugar was called 'Ahwāzī' in the al-Shām region.<sup>1582</sup> Nāṣir-i Khuṣraw, a Persian traveller who visited the Land of Israel in 1047 CE, testifies that sugar cane was grown in abundance in Tripoli, and even that sweet juice was produced from it.<sup>1583</sup> It appears from certain Genizah letters that the cities of Ashkelon, Ramlah, Tripoli and Tyre were centres of production and export of sugar to Egypt.<sup>1584</sup> Yet Egypt itself produced sugar, and was an important centre of trade and export of the commodity to the Maghreb and other des-

<sup>1575</sup> Maimonides, Regimen, 3:2, 4, 11; Maimonides, Aphorisms, 13:6; 20:78; 21:69; 22:40.

<sup>1576</sup> Maimonides, Answers, 4:20.

<sup>1577</sup> al-Qazwini, p. 230. Cf. Ibn Sina, p. 417.

<sup>1578</sup> Delaville, I, p. 427, Doc. no. 627.

<sup>1579</sup> Ashtor, Sugar.

<sup>1580</sup> Detailed sources in Amar, Production, p. 244; Shapira, Sugar, pp. 138–139.

<sup>1581</sup> Amar, Production, p. 246.

<sup>1582</sup> al-Tamimi, p. 10b.

<sup>1583</sup> Khusraw, p. 6.

<sup>1584</sup> Gil, II, p. 187. no. 487; p. 201, no. 491, p. 272, no. 508.

tinations.<sup>1585</sup> These letters indicate that Jews played a role in the sugar trade and in its production.<sup>1586</sup>

## Sulphur

Sulfur (S), **A:** **kibrīt**

**D&H:** Sulphur is a mineral with the atomic weight of 16. During the course of geological history sulphur deposits accumulated in the regions of hot and shallow lakes and were discovered in several areas of this region, mainly the Jordan Valley and in the Negev (see figure 51).<sup>1587</sup> Sulphur was well-known in most ancient cultures. In ancient Egypt it was used in the preparation of colours and in cosmetic materials.<sup>1588</sup> In ancient Babylon its smoke was used as a disinfectant and it also served for the treatment of diseases and scratches.<sup>1589</sup> It is mentioned in the Bible as an incendiary substance in the destruction of Sodom and Gomorrah (Gen.19:24) and is also referred to in the account of the giving of the Torah on Mount Sinai (Deut. 29:24). The Greeks and Romans were familiar with the techniques of sulphur burning and the use of its smoke as a disinfectant. Dioscorides describes the use of *theion* to treat asthma, leprosy, scorpion stings, skin diseases, problems in hearing, and staunching the flow of blood (haemorrhages),<sup>1590</sup> while Pliny describes the medicinal use of sulphur in treating various skin diseases. Roman and Byzantine armies also made use of sulphur as a combustible substance; later it was used in the production of gunpowder.<sup>1591</sup> In the medieval period it was also used to treat lepers.<sup>1592</sup>

**PU:** Sulphur figures in 4 lists of *materia medica* (T-S Ar.35.344; T-S Ar.35.388; T-S Ar.39.487; T-S NS 224.65) and in 2 prescriptions: for itch (T-S Ar.39.335) and for snakebite (T-S NS 66.46).

**TU:** Sulphur is mentioned in several medical books: descriptions of quasi-medical alchemical processes (T-S Ar.44.45; T-S Ar.44.59; T-S 16.270r;

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<sup>1585</sup> Gil, Kingdon, IV, sugar is mentioned in more than forty documents as a commodity. Goitein, Society, I, pp. 125, 154, 185, 195, 366, 377, IV, pp. 246, 247, 248, 441–442 and more.

<sup>1586</sup> For example: Goitein, Society, I, pp. 89, 366–367; IV, pp. 247–248.

<sup>1587</sup> *HE*, XI, p. 151; Challenger.

<sup>1588</sup> *HE*, V, p. 149.

<sup>1589</sup> al-Kindi, p. 322, no. 252.

<sup>1590</sup> Dioscorides, V.124.

<sup>1591</sup> *HE*, XI, pp. 149–150.

<sup>1592</sup> Cawston.

T-S 20.20; T-S NS 222.8; T-S AS 165.79). It also appears as one of the simples of different recipes: dyeing the hair black (T-S Ar.40.121), an ointment for unknown uses (T-S Ar.40.133), rat poison (T-S Ar.43.43), and for more unknown uses (T-S AS 162.69; T-S AS 183.322r).<sup>1593</sup>

**OMU:** al-Tamīmī writes about sulphur, which was produced in the Dead Sea area, and describes its trade and uses. He especially mentions ‘white sulphur’ which, he says, ‘originates from the shores of the Dead Sea which lies between Tsoar and Jericho in the land of Palestine and is in the vicinity of Jerusalem.’<sup>1594</sup> Al-Kindī describes the use of yellow sulphur, a component in medications for skin diseases and mental illnesses.<sup>1595</sup> Maimonides reports that sulphur, ‘which is non-combustible’, was used as an external medication for ‘crushed’ bodily injuries and for washing and drying the body. It was also used to treat bites, scorpion stings, and snakebites, and its smoke was used to repel poisonous creatures.<sup>1596</sup> Al-Qazwīnī describes the formation of sulphur and cites Aristotle, who names three colour-types of sulphur: red, white, and yellow. He also describes its medicinal uses: to treat paralysis, migraine, wounds, inflammations, leprosy, skin diseases, joint inflammation, colds, and bites; to dispel lice and snakes, to whiten the hair, and against swellings.<sup>1597</sup>

**TAI:** The geographer al-Muqaddasī reports that sulphur was produced in the Jordan Valley.<sup>1598</sup> Other sources describe the production of sulphur (among other minerals and medicinal substances) in Sicily, and its trade in other Mediterranean cities and ports,<sup>1599</sup> by merchants such as Nahray b. Nissim.<sup>1600</sup> The sulphur trade is mentioned in an 11th-century court document from Tsoar discovered in the Genizah.<sup>1601</sup>

<sup>1593</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>1594</sup> al-Tamimi, p. 20a. For greater detail see Amar & Seri, p. 31.

<sup>1595</sup> al-Kindi, nos. 20, 47, 205.

<sup>1596</sup> Maimonides, Aphorisms, 15:33; 19:6; Maimonides, Poisons, pp. 101, 118, 128, 135. In connection with its medicinal qualities see Maimonides, Aphorisms, 21:89.

<sup>1597</sup> al-Qazwini, pp. 213–214. Cf. Ibn al-Baytar, al Jami, III, pp. 49–50; Leclerc, no. 1880; al-Antaki, pp. 266–267.

<sup>1598</sup> al-Muqaddasi, p. 184.

<sup>1599</sup> Gil, Kingdom, 318.

<sup>1600</sup> Goitein, Society, I, p. 154.

<sup>1601</sup> Goitein, Jewry, p. 200.

## Sweet Violet

*Viola odorata* (Violaceae), **A: banafsaj**<sup>1602</sup>

**D&H:** Perennial with long-stemmed roots, heart-shaped leaves, and small, purple coloured and sweet scented flowers (2 cm.), which bloom in spring (see figure 52). Four wild varieties grow in the Land of Israel and are closely related to the cultivated species such as the pansy.<sup>1603</sup> The violet species consists of 300 varieties that grow in gardens throughout the world. The perfume produced from the scented, purple flowers is mentioned in the Talmud as 'sigali.' Dioscorides reports the use of the plant *Ion* to treat epilepsy and throat inflammation.<sup>1604</sup>

**PU:** Different products of sweet violet figure in 2 lists of *materia medica* (T-S Ar.35.252; T-S AS 179.56) and in 13 prescriptions: for swelling (oil, T-S NS 194.70), hallucination (flowers, T-S 16.291), diet (flowers, T-S Ar.41.71), treating the face and the eyes (T-S Ar.35.363), as an aphrodisiac (flowers of Iraqi kind, T-S NS 164.159), for unknown uses (T-S K25.212; T-S NS 223.82–83; T-S NS 327.97; seeds, T-S Ar.40.141; oil, T-S Ar.43.238 [ointment]; flowers, T-S 13J6.14; blue flowers, T-S NS 305.75–76) and for an alchemical astrological preparation (T-S 8J14.3).

**TU:** Sweet violet is mentioned in medical books in recipes for unknown uses (T-S AS 162.132; T-S AS 176.358), a fragrant drink (T-S NS 222.28v), preserves (T-S AS 158.284; T-S AS 158.266), including one for syrup which was copied, according to Isaacs, from the hospital pharmacopoeia of Ibn Abī al-Bayān (T-S Ar.39.91), for the treatment of headache (T-S Ar.40.152), pain in the eyes, stomach ache, and headache (T-S NS 222.27), bites of scorpions and reptiles and haematuria (T-S AS 176.277), diarrhoea, abdominal pains, dysuria, and fevers (T-S AS 177.407), palpitation (T-S AS 177.440), pathological conditions such as heat, dryness, and black and red bile (T-S AS 111.22), and diseases affecting the legs and nails such as sciatica, varicose veins, and venesection (T-S NS 306.172). It is also mentioned in tabulated work on medicine concerning treatment of hectic and septic fevers, cancer, erysipelas, soft and hard inflammatory swellings, and elephantiasis (T-S Ar.41.137), in a

<sup>1602</sup> For a discussion of identification in medieval and Jewish sources, see Amar, Production, pp. 224–225; synonyms are found in Issa, p. 189, no. 18; Dinsmore & Dalman, no. 212.

<sup>1603</sup> A description is in Feinbrun-Dothan, p. 339; Plants & Animals, XII, p. 216; Kohen & Shemid'a.

<sup>1604</sup> Dioscorides, IV.122.

chapter on treatment for deafness, earache and throbbing headache (T-S AS 180.135) and in lexica of *materia medica* (T-S Ar.40.60; T-S Ar.41.61; T-S NS 327.97r; T-S AS 153.51r). Sweet violet blossom features in a recipe useful for dry, brittle, and splitting hair (T-S Ar.40.66) and in one for skin lotions and poultices to heal pustules and remove scabs, citing Galen (T-S Ar.42.22). Sweet violet oil is found in a recipe for the treatment of attacks of diarrhoea (T-S K14.46), immersion in bathtub for the management of fever (T-S NS 224.186), eye diseases (T-S AS 157.355), and insufflation and venesection (T-S AS 176.501).<sup>1605</sup>

**OMU:** al-Muqaddasi mentions ‘duhn al-banafsaj’ (violet oil) which is produced in Damascus and is of low quality.<sup>1606</sup> ‘Abd al-Laṭīf al-Baghdādī, who was active in the region during the Ayyubid period, notes that ‘banafsaj’ that grew in Egypt had an exceptionally sweet scent, but the people in Egypt did not know how to produce oil from it in the proper way, or to preserve it.<sup>1607</sup> Al-Kindī states that the ‘banafsaj’ was used to treat the breathing tracts, intestinal disorders, mumps, toothache, haemorrhoids, and night blindness.<sup>1608</sup> Maimonides told the Ayyubid sultan that he recommended rubbing ‘banafsaj oil’—purified violet oil—on the skin, and it is mentioned as a component in a sleeping drug.<sup>1609</sup> Violet was said to be a cold and moist drug and a mild purgative. Violet oil was used as protection on ‘the lips of one who had sucked poison.’<sup>1610</sup> Ibn al-Bayṭār notes in his entry ‘banafsaj’ that the substance was used as a medication for the stomach, for cough, to cure eye diseases, to relieve pain, to reduce fever and to dispel gases.<sup>1611</sup> In his entry ‘duhn al-banafsaj’ Ibn al-Bayṭār describes violet oil and lists its medicinal uses.<sup>1612</sup> al-Qazwīnī relates that the plant grew in shady areas and served as a medication for severe eye inflammation and to treat colds and various skin diseases.<sup>1613</sup>

**TM:** Yemenite Jews called the three-coloured violet (*Viola kitaibeliana*) ‘banpasaj’ and used it medically as an eye dressing for inflammation and

<sup>1605</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>1606</sup> al-Muqaddasi, p. 181; al-Badri, p. 79.

<sup>1607</sup> It seems that the writer intended making a comparison with the high quality scented violet in Greater Syria: al-Baghdadi, p. 76. Details in Amar, Production, p. 225.

<sup>1608</sup> al-Kindi, nos. 9, 60, 78, 125, 169. For additional uses by physicians of that period, see *ibid.*, p. 247, no. 47. Cf. Ibn Sina, p. 266.

<sup>1609</sup> Maimonides, Answers, 5; Maimonides, Sexual, 18:1.

<sup>1610</sup> Maimonides, Regimen, 2:7, 9, 20; 3:4; Maimonides, Poisons, p. 97; Maimonides, Aphorisms, 21:74.

<sup>1611</sup> Ibn al-Baytar, al-Jami, I, pp. 114–115; Leclerc, no. 353.

<sup>1612</sup> Ibn al-Baytar, al-Jami, II, p. 107; Leclerc, no. 912.

<sup>1613</sup> al-Qazwini, p. 242.

sores. It was used internally to treat fever and swellings in the body, and to regulate the digestive tract, cleanse the stomach, cure jaundice and severe cough, to soothe, and to induce sleep.<sup>1614</sup> Various types of violet, especially sweet violet, were used in Iran to reduce fever, and relieve headache, as a mild purgative, as a medication for constipation, as a soothing drug and to induce perspiration.<sup>1615</sup> The use of this plant is widespread in the East to the present for treating cough.<sup>1616</sup> Sweet violet is used to ease backache in TM in Israel.<sup>1617</sup>

**TAI:** Violet flower and oil are mentioned as one of the materials traded and sold in Cairo, Mahdiyya, and Qayrawān.<sup>1618</sup> During the Mamluk period sweet violet was listed among the perfume plants of Greater Syria,<sup>1619</sup> especially the region of Beaufort and the Litani River.<sup>1620</sup>

## Tamarind

*Tamarindus indica* (Fabaceae), **A: tamar hindī**<sup>1621</sup>

**D&H:** Tall evergreen tree (up to 25 m). Feathery leaves, yellow flowers; the fruits are brown fleshy pods and contain big seeds, kidney shaped. Tropical origin (Africa and Asia) and distribution. The tree is cultivated in Africa, India, and Mexico.<sup>1622</sup> In ancient India the fruit's pulp was considered an astringent, was used as a tonic in case of menorrhagia, and a safe laxative. The leaves were used to treat eye diseases and jaundice.<sup>1623</sup>

**PU:** Tamarind features in 8 lists of *materia medica* (T-S AS 169.199; T-S AS 184.234; T-S NS 164.1; T-S NS 306.106; T-S NS 306.117; T-S NS 325.127; T-S AS 179.132; T-S AS 184.234) and in 6 prescriptions: for fever (T-S AS 155.277), cough (Iraqi, T-S K25.116), as an aphrodisiac (T-S NS 164.159; T-S NS 306.177), and for unknown uses (T-S Ar.34.217; T-S Ar.34.150).

<sup>1614</sup> Rejani, p. 51, no. 123. The Jews of Iraq made similar use of the plant and other closely related varieties: Ben-Yakov, pp. 462–463.

<sup>1615</sup> Hooper, p. 185. Details, including content of these substances, are in al-Rawi & Chaakravarty, p. 97.

<sup>1616</sup> al-Kindi, p. 247, no. 47.

<sup>1617</sup> Lev & Amar, Ethnic, p. 162.

<sup>1618</sup> Gil, Kingdom, IV, p. 100, no. 632.

<sup>1619</sup> al-'Umari, p. 26; al-Qalqashandi, p. 87.

<sup>1620</sup> 'Uthmani, p. 481.

<sup>1621</sup> Issa, 176–16; Maimonides, Glossaire, no. 381.

<sup>1622</sup> Lev & Amar, Ethnic, p. 246.

<sup>1623</sup> al-Kindi, p. 251, no. 58.



**TU:** Tamarind is mentioned in several medical books as a simple in a recipe for the treatment of dry, brittle, and splitting hair (T-S Ar.40.66), and in advice on diet and beverages for invalids (T-S Ar.42.35). It is also mentioned in lexica of *materia medica* (T-S Ar.35.366r; T-S AS 180.32), one of which is arranged alphabetically (T-S Ar.41.37).<sup>1624</sup>

**OMU:** Al-Kindī prescribes tamarind fruits in an infusion and seeds in a decoction.<sup>1625</sup> R. Nathan ben Yoel Falaquera recommends tamarind as a purgative and to cool of the body in case of fever.<sup>1626</sup> Maimonides recommends, in a letter to the Egyptian ruler, a summer diet that includes tamarind.<sup>1627</sup>

**TM:** In modern Egypt it is used as a mouthwash for thrush and as a laxative. In Iran the seeds are used in a plaster for boils.<sup>1628</sup> The Yeminite Jews used it to treat nausea, vomiting, fever, and jaundice, and to strengthen the stomach and the heart.<sup>1629</sup>

**TAI:** Tamarind was traded by the Genizah community, sometimes in barter.<sup>1630</sup> It was exported from Egypt and other places to the Maghreb and Sicily.<sup>1631</sup>

## Tragacanth

*Astragalus gummifer* (Fabaceae), **A:** *kathirā*<sup>1632</sup>

**D&H:** Tragacanth is a low, cone-shaped thorny bush, with long yellow spikes. Its many branches diverge from the neck of the root, its composite leaves are pinnate and pointed, and its flowers are white or yellow. A scentless gum is produced by slashing the neck of the root or stem. It grows on Mount Hermon and other mountains in the Middle East, in Asia Minor, and in southern Europe.<sup>1633</sup> The Bible describes a caravan of Ishmaelites on the road from Mount Gilead to Egypt, with camels

<sup>1624</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1625</sup> al-Kindi, p. 251, no. 58.

<sup>1626</sup> Amar & Buchman, p. 251.

<sup>1627</sup> Maimonides, Answers, p. 143.

<sup>1628</sup> Hooper, p. 175.

<sup>1629</sup> Reiani, p. 48, no. 113.

<sup>1630</sup> Goitein, Society, I, p. 200, IV, p. 261.

<sup>1631</sup> Gil, Kingdom, II, p. 864, no. 287, III, p. 252, no. 373, p. 263, no. 376, p. 679, no. 309, and more. Ben-Sasson, pp. 402, 466, 533.

<sup>1632</sup> Maimonides, Glossaire, p. 61, no. 191; al-Antaki, p. 267; Issa, p. 26, no. 7; Low, II, pp. 419–424.

<sup>1633</sup> Zohary, p. 439; Feinbrun-Dothan, p. 309; Uphof, p. 57.

‘bearing spicery [‘nekhot’] and balm and myrrh’ (Genesis 37:25). Elsewhere it mentions the ‘best fruits of the land’, which the sons of Jacob brought down to Joseph in Egypt: ‘a little balm, a little honey, spices [‘nekhot’] and myrrh, nuts and almonds’ (Genesis 43:11). The substance called ‘nekhot’ in Hebrew is identified with the gum of the tragacanth.<sup>1634</sup> According to Dioscorides, the *Tragakanthe* (identified with *Astragalus aristatus*) is a lowly, prickly bush that spreads over the ground. This name was also given to the jellified sap that dripped from the slashed plant. The gum is translucent, smooth, and has a sweet taste, and its properties resemble acacia gum. It serves as a component in medications for chest diseases, cough, kidney pains, and glandular problems.<sup>1635</sup> The Talmud mentions the word ‘kashritha’ which probably means ‘kathira.’

**PU:** Different kinds of tragacanth figure in 5 lists of *materia medica* (T-S Ar.39.451; T-S NS 224.62; T-S NS 279.57; T-S NS 305.69; yellow, T-S Ar.51.53) and in 9 prescriptions: for weak eyesight and migraine (Maimonides; T-S Ar.30.286), cough (red and white, T-S 8J15.20) face and eyes (T-S Ar.35.363), cleaning or treating the teeth (T-S Ar.39.451), eye diseases (T-S Ar.44.162 [2]; white, T-S Ar.42.60), wind and colic (T-S NS 305.50 [with opopanax and opium]), as a purgative (white, T-S Ar.41.72) and as linctus and ointment (T-S AS 147.192).

**TU:** Tragacanth is mentioned in general medical books (T-S Ar.40.104; T-S Ar.44.86; T-S Ar.44.94; T-S Ar.44.102) and in books on ophthalmology (T-S Ar.43.101; T-S Ar.43.166; T-S Ar.45.32; T-S NS 90.59; T-S NS 222.38; T-S NS 327.87), dermatology (T-S Ar.45.49), dentistry (T-S Ar.42.44), inflammation (T-S Ar.44.91), and *materia medica* (T-S Ar.39.273; T-S Ar.43.132; T-S Ar.44.204; T-S Or.1081.J.60), and in pharmacopoeias (T-S Ar.40.130; T-S Ar.41.96; T-S Ar.44.205; T-S NS 164.152; T-S NS 305.107). It is also mentioned in several recipes: for electuaries against colds (T-S Ar.11.13), for purgatives, stomach ailments, colic, palpitation, theriac, eye disease, wind, wounds, and ulcers (collyria; T-S Ar.42.199; T-S Ar.44.30; T-S Ar.45.28; T-S Ar.45.56), for unknown uses (T-S Ar.42.189; T-S AS 177.309), and in other fragments (T-S Ar.38.40; T-S Ar.38.124; T-S NS 297.48; T-S NS 297.229; T-S NS 297.232).<sup>1636</sup>

**OMU:** According to the physician Assaf the substance is the gum of a plant called in Aramaic ‘ankat ayla’ and in Greek ‘drakkanti’. Its medicinal

<sup>1634</sup> Discussion in Feliks, *World*, p. 274.

<sup>1635</sup> Dioscorides, III.23.

<sup>1636</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

uses are as a perspirant, to cure cough and diseases of the respiratory tract, throat pains, diseases of the intestines and the eyes, elimination of kidney stones, to stop bleeding, and to treat wounds.<sup>1637</sup> According to al-Kindī, tragacanth gum is used to strengthen the limbs, to treat cough and leg and eye diseases, and it is a component in ointments.<sup>1638</sup> Maimonides states that 'dragaman' was added to strong purgatives to prevent vomiting and damage to the intestines.<sup>1639</sup> In his entry 'kathīrā' Ibn al-Bayṭār describes the use of the gum to prevent 'moisture issuing from the head, to relieve bad feelings, to strengthen the intestines, to effectively treat abscesses in the eyes and lung diseases, to cure cough, burns, eye diseases, smallpox and to stop haemorrhages.'<sup>1640</sup>

**TM:** The gum of this plant is used in the process of dyeing fabrics and in the cosmetic industry. In Iraq the gum is used in making ice-cream and to paint walls. In Iran medicinal uses are made of it to the present day.<sup>1641</sup> The Jews of Tripoli used the substance to treat cough<sup>1642</sup> while the Jews of Iraq called it 'kathīrā biza (i.e., bayḏā<sup>3</sup>)' and reported its use in treating disorders of the urinary tract.<sup>1643</sup> Tragacanth gum is marketed today in the form of drops or thin flakes, and it serves as an adhesive in pills and tablets, as a suspension for non-soluble powders, and to produce an emulsion for oils and other gums.<sup>1644</sup>

**TAI:** Tragacanth was exported regularly from the Levant during the Middle Ages. The gum was sent to various countries where medications were made from it, mainly for diseases of the eye, stomach, and intestines, and against smallpox.<sup>1645</sup> In a Genizah letter dated 1060, Ya'aqov ben Yosef of Ashkelon asks Nahray ben Nissim of Fustat the price of 'kathīrā' in Egypt. This probably shows that he intended to supply the gum to Egypt.<sup>1646</sup> Several other Genizah documents describe the

<sup>1637</sup> Assaph, IV.415.

<sup>1638</sup> al-Kindī, nos. 55, 111, 115, 134, 173. Cf. Ibn Sina, p. 340.

<sup>1639</sup> Maimonides, Aphorisms, 3:112; 21:78; Maimonides, Asthma, 12:8.

<sup>1640</sup> Ibn al-Bayṭār, al-Jami, IV, p. 52; Leclerc, no. 1889. Cf. al-Antaki, p. 267.

<sup>1641</sup> Uphof, p. 57; Hooper, p. 90; Ben-Yakov, p. 523; Howes, pp. 39–44; Morton, p. 145.

<sup>1642</sup> Krispil, p. 1192.

<sup>1643</sup> Ben-Yakov, p. 330.

<sup>1644</sup> Hill, p. 152; Uphof, p. 57. For the contents of active substances in tragacanth gum see Chopra et al., p. 76. Medicinal uses are given in Beach; Morton, pp. 143–144.

<sup>1645</sup> On the trade in tragacanth gum see Heyd, pp. 623–624; Amar, Substances, p. 52.

<sup>1646</sup> Gil, III, no. 487, p. 18a.

import-export business in tragacanth in Egypt.<sup>1647</sup> Ibn al-Bayṭār in his entry ‘kathīrā’ states, ‘there is a lot of it in the mountains of Beirut and Lebanon in the al-Shām region.’<sup>1648</sup> al-Dimashqī lists ‘kathīrā’ with 90 other varieties of medicinal plants growing in Lebanon whose harvest- ing could be a source of livelihood.<sup>1649</sup>

## Turmeric

*Curcuma longa* (Zingiberaceae),<sup>1650</sup> **A:** kurkam, kurkum<sup>1651</sup>

**D&H:** Tropical perennial (90 cm), with a short stem, and knobbly rhi- zome.<sup>1652</sup> The plant appears in the list of coloured plants in Assyria dated to the 7th century BCE. In Babylon it was used as a component in medi- cations for curing the eyes, muscles, headaches, and colds.<sup>1653</sup>

**PU:** Turmeric figures in 5 lists of *materia medica* (T-S Ar.30.274; T-S Ar.42.15; T-S Ar.43.315; T-S NS 164.12; T-S NS 306.117) and in 2 pre- scriptions: for eye diseases (T-S NS 218.21) and for unknown uses (T-S Ar.42.15).

**TU:** Turmeric is mentioned in a general medical book (T-S NS 90.71) and in books on ophthalmology (T-S Ar.39.351), dermatology (T-S Ar.45.49), and *materia medica* (T-S As 187.227), in pharmacopoeias (T-S NS 90.74; T-S NS 305.212) and in other fragments (T-S NS 297.115).<sup>1654</sup>

**OMU:** According to al-Kindī, the powder of the turmeric root stem served as a component in medications to strengthen the teeth and to treat the throat, gums, mouth sores, and haemorrhoids.<sup>1655</sup> Turmeric was a com- ponent in a preparation to treat throat pains and swellings in the mouth, and also served as toothpaste that strengthened the gums.<sup>1656</sup> According to al-Bīrūnī, turmeric was a drug that counteracted various poisons.<sup>1657</sup> Maimonides says that turmeric was a hot and dry drug.<sup>1658</sup> Ibn al-Bayṭār

<sup>1647</sup> Goitein, Society, I, p. 213. Gil, Kingdom, II, p. 503, no. 173, p. 653, no. 222, p. 169, no. 354, p. 354, no. 398, p. 545, no. 464, p. 551, no. 466.

<sup>1648</sup> Ibn al-Baytar, al-Jami, IV, pp. 52–53; Leclerc, no. 1889.

<sup>1649</sup> al-Dimashqī, p. 199. Cf. al-Nuwayri, p. 298; Beach.

<sup>1650</sup> Loewenfeld & Back, p. 255.

<sup>1651</sup> Maimonides, Glossaire, no. 205; Issa, p. 63, no. 3; al-Antaki, p. 272.

<sup>1652</sup> Chevallier, p. 88.

<sup>1653</sup> Levey, Chemistry, pp. 105, 113.

<sup>1654</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>1655</sup> al-Kindi, nos. 74, 125.

<sup>1656</sup> Ibid., nos. 69, 104.

<sup>1657</sup> al-Biruni, II, p. 55.

<sup>1658</sup> Maimonides, Aphorisms, 21:80.

discusses the identity of the plant and notes that ‘the turmeric known to us is the roots imported from India.’ He later cites a source stating that the people of Basra say, ‘turmeric is saffron—they likened it to saffron because it produced the same yellow colour as saffron.’ The root stem served to treat skin diseases, to dry wounds, to strengthen the eyesight, and to remove white spots from the eyes.<sup>1659</sup> This physician notes that he uses it to cure wounds and to treat insanity.<sup>1660</sup>

**TM:** Among Yemenite Jews, turmeric was a medicine against jaundice, stomach-ache, digestive disturbances, and headaches. The substance also served as a component in medications to treat infections of the vagina and excess secretions; also to prepare compresses to treat backaches as well as a preparation to remove bunions.<sup>1661</sup> In Iraq and Iran medical use was made of the powder prepared by grinding the root stem of the plant, which served as a stimulating and strengthening drug. The substance was also a component in a cooling ointment for external use.<sup>1662</sup> In Egypt, powdered turmeric served as a purgative, to accelerate menstruation, and as a diuretic.<sup>1663</sup> In Asia the yellow powder served as a medicine for diseases of the intestines and liver, to cure colds and ulcers, and as a component in a skin ointment.<sup>1664</sup> In India medical properties are attributed to turmeric for strengthening the heart and stomach, and in Java it is used to cure diseases of the urinary tract. In Far Eastern countries it was used in the past as a substance to cure liver infections and jaundice.<sup>1665</sup>

**TAI:** In the Middle Ages the direction of trade in turmeric was from the eastern countries to Europe, in contrast to the direction of the trade in saffron. One of the names for turmeric in Europe in medieval times was ‘Indian saffron,’ and it served as a cheap substitute for saffron. An example of this kind of trade appears in a commercial document dated to 1412 that describes the purchase of turmeric roots in Ramlah for a Venetian trading house whose representatives resided in the city of Hamath in Syria.<sup>1666</sup> Turmeric was among the merchandise traded in Sicily by the

<sup>1659</sup> Ibn al-Baytar, *al-Jami*, IV, p. 65; Leclerc, no. 1917.

<sup>1660</sup> Ibn al-Baytar, *al-Jami*, I, pp. 38–39.

<sup>1661</sup> Reiani, no. 38. Cf. uses among the Jews of Iraq in Ben-Yakov, p. 724.

<sup>1662</sup> Hooper, pp. 109–110. Cf. Uphof, p. 165.

<sup>1663</sup> Ducros, p. 158.

<sup>1664</sup> Uphof, p. 165.

<sup>1665</sup> al-Kindi, p. 303.

<sup>1666</sup> Ashtor, *Trade*, p. 285.

Genizah people.<sup>1667</sup> Rafael Malki mentions the ‘choice and excellent turmeric’ that was a component in a general medication (pill) for the poor of Jerusalem.<sup>1668</sup> Moshe Poriat (17th cent.) relates that he saw cheap turmeric in the markets of Jerusalem, but it was of low quality.<sup>1669</sup>

## Turpeth

Turbith, Indian Jalap, *Ipomoea turpethum* (Convolvulaceae), **A: turbad, turbad**<sup>1670</sup>

**D&H:** Turpeth is a tropical, perennial climber; the resinous extract from its roots is used for medicinal purposes.<sup>1671</sup>

**PU:** Different kinds of turpeth figure in 7 lists of *materia medica* (T-S Ar.30.274; T-S Ar.35.328; T-S Ar.43.315; T-S AS 176.22; T-S AS 180.199; T-S AS 183.159; Iraqi, T-S AS 184.234) and in 11 prescriptions: for treating the face and the eye (T-S Ar.35.363), itch (T-S Ar.39.335), cleaning or treating the teeth (T-S Ar.39.451), as a purgative (T-S Ar.39.458; T-S Ar.41.72), and for unknown uses (T-S K25.212; T-S Ar.41.81; T-S Ar.42.67 [small ‘itṛiful’]; T-S AS 177.417 [compound]; T-S Or.1081.J.39; Iraqi, T-S NS 83.28).

**TU:** Turpeth is mentioned in several Genizah fragments of medical books as a simple in recipes for unknown uses (T-S Ar.43.317; T-S AS 181.193; T-S Ar.41.37) and in recipes for pastes (T-S Ar.39.473) and violet tablets (T-S Ar.40.130).<sup>1672</sup>

**OMU:** According to al-Kindī ‘turbid’ is a component in a general medicinal preparation.<sup>1673</sup> Ibn al-Bayṭār quotes Abū al-‘Abbās al-Nabatī stating that the plant grows in Iraq.<sup>1674</sup> Maimonides maintains that ‘turbad’ is a hot and dry purgative drug.<sup>1675</sup> Benevenutus describes the use of ‘Spurge’, a component in the ‘Jerusalem pill’—a medication against cataract.<sup>1676</sup>

<sup>1667</sup> Gil, Kingdom, I, p. 565.

<sup>1668</sup> Malki, p. 67.

<sup>1669</sup> Ya‘ari, Travels, p. 278.

<sup>1670</sup> Issa, p. 100, no. 9.

<sup>1671</sup> A description is in Grieve, p. 823; Hooper, p. 130.

<sup>1672</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>1673</sup> al-Kindi, no. 214; Ibn Sina, p. 446.

<sup>1674</sup> Ibn al-Baytar, al-Jami, II, pp. 136–137; Leclerc, no. 407. Cf. al-Antaki, p. 91.

<sup>1675</sup> Maimonides, Aphorisms, 21:80; Maimonides, Regimen, 2:11. Cf. al-Biruni, I, p. 89.

<sup>1676</sup> Benevenutus, p. 33; the editor, Wood, identifies this with turpeth.

Saladino d'Ascoli relates that 'turbit' is a 'herb root' and he details its qualities and uses.<sup>1677</sup>

**TM:** In Iran today the plant is called 'turbud' and is imported mainly from India and Sri Lanka (Ceylon). In the Near East and India it is used as a purgative, and also to treat backache and diseases of the kidney.<sup>1678</sup> In Egypt 'turbud nabaṭī' also serves as a purgative and to treat haemorrhoids.<sup>1679</sup> In Europe the roots of turpeth were used as a purgative drug in past centuries.<sup>1680</sup>

**TAI:** Turpeth is mentioned as a substance in demand in Sicily at the mid-11th century (Gil identified it as mercury powder; T-S 12.251).<sup>1681</sup> Italian trade documents dated to 1481 describe the trading of parcels of turpeth bought in Acre and sent to Italy.<sup>1682</sup>

## Vitriol

Verdigris, salt sulphate

**D&H:** The meaning of the term *zāj* is a salt of sulphuric acid compounded with various metals such as iron, copper, lead, and zinc.<sup>1683</sup> Various metallic salt sulphates are presented below (table 13).<sup>1684</sup>

Table 13 Metallic salt sulphates

Scientific name	Formula	English name	Arabic names	Latin names
Iron sulphate	FeSO <sub>4</sub>	Green vitriol	Zāj al-'aṣfar Zāj al-'akḥḍar	Ferrous sulphate
Copper sulphate	CuSO <sub>4</sub>	Blue vitriol	Zanjār, Zāj 'azraq, wardīt	Cuprum sulphatum
Zinc sulphate	ZnSO <sub>4</sub>	White vitriol	Zāj 'abyad, Zāj khurasānī	Sulphatum zincum
Copper salt	CuSO <sub>4</sub> ·5H <sub>2</sub> O		Zāj 'azraq	

<sup>1677</sup> Saladino, p. 85.

<sup>1678</sup> Hooper, p. 130. Cf. Uphof, p. 283.

<sup>1679</sup> Ducros, p. 50.

<sup>1680</sup> Grieve, p. 823, where the content of substances is given.

<sup>1681</sup> Gil, Kingdom, III, p. 865, no. 562. Ben-Sasson, p. 238.

<sup>1682</sup> Ashtor, Trade, p. 298.

<sup>1683</sup> Ghaleb, I, 478, nos. 8913–8916.

<sup>1684</sup> According to Ghaleb, I, 478; Reiani, p. 67; *HE*, XXV, 56–57; Maimonides, Glos-saire, no. 140; al-Kindi, p. 272, no. 117; p. 318, no. 238.

Some other Arabic names such as ‘qalqand’ and ‘qalqadhīs’ were used in the medieval period.<sup>1685</sup>

**PU:** Different kinds of vitriol figure in 4. lists of *materia medica* (verdigris, T-S Ar.39.487; *zāj*—T-S Ar.43.317; *qalqand*, T-S NS 325.127; *zāj qašras*, T-S Ar.30.274; *zanjār ‘irāqī*, T-S Ar.34.341) and in 4 prescriptions: for eye diseases (*zanjār ‘irāqī*, T-S Ar.42.60; T-S Ar.44.162) and for unknown uses (*zāj fārisī*, T-S Ar.38.29; *zanjār*, T-S AS 169.297 [ointment]).

**TU:** Vitriol is mentioned in medical books in recipes for the treatment of necrotic lesions (compound; T-S AS 172.16). It also appears as a simple in a lexicon of *materia medica* (T-S Ar.39.199), a quasi-medical recipe (T-S NS 222.8), and an alchemical formula (T-S K25.83v), which also mentions verdigris. Verdigris is mentioned in the preparation of verdigris ointment for the treatment of deeply penetrating and chronic diseases (T-S AS 182.298), in a quasi-medical magic formula (asking for protection; T-S NS 306.198v), and recipes for unknown uses (T-S AS 162.69).<sup>1686</sup>

**OMU:** al-Kindī reports the use of ‘zāj’ to treat various types of ulcers including cancerous ones, and the use of ‘qalqatar’, a component in a medication against exhaustion and eye problems.<sup>1687</sup> Maimonides notes that ‘wardīt’ is one of the toxic mineral drugs similar to ‘martak’ (lead) and orpiment (arsenic), which are dangerous especially in internal use and at high dosage. In another place he describes vitriol and green vitriol, components of a medication that ‘causes a revulsion of sexual lust in a man even if there is a beautiful woman before him’. These medicines are ‘so sharp that they are nearly as powerful as fire’, and they serve for treating ‘ugly boils’ and burns. Maimonides also quotes al-Tamīmī asserting that various types of vitriol were used for treating eye diseases.<sup>1688</sup> Al-Qazwīnī explains the preparation of various types of ‘zāj’ from sulphur and earth (metals); he lists the different types of metals and described their medical uses, such as treating skin diseases, ringworm, haemorrhoids, stopping bleeding, and keeping the teeth healthy. In the entry ‘al-zanjafur’ composed of sulphur and mercury, al-Qazwīnī warns against the toxicity of the substance and notes that it serves to close wounds, to

<sup>1685</sup> Amar & Seri, pp. 67–68.

<sup>1686</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>1687</sup> al-Kindī, nos. 73, 150, 177, 224. Cf. Ibn Sina, pp. 303–304.

<sup>1688</sup> Maimonides, Poisons, pp. 143–144; Maimonides, Sexual, 11; Maimonides, Aphorisms, 9:30; 15:9, 41, 57. For its medical properties see *ibid.*, 21:88, 89; 25:46.



speed clotting, and to heal burns, but it rots the teeth and is a fatal poison when a high dosage is given or when it is taken internally.<sup>1689</sup>

**TM:** Yemenite Jews made use of metal sulphides: 'zāj ḥaraṣīnī' (zinc sulphate) was used as an eye medication, mainly to prevent emissions and infections, and to treat cancerous sores and sexual wounds; 'zāj 'akhḍar' (iron sulphate) was for external use only, mainly for skin diseases, wounds, and burns, and also for the treatment of haemorrhages of the nose and gums; 'zāj 'azraq' (copper salt) served for eyewash or against pain by being smearing on the place.<sup>1690</sup>

**TAI:** al-Rāzī notes that 'zāj al-shahīra' (dark zāj) could be found mostly in the mountains of al-Shām and in Egypt, and that there were a few types in existence. al-Tamīmī claims that in Amman and its surroundings 'zāj 'aṣfar' (yellow zāj) was mined, and was used in al-Shām for dyeing and the processing of metals.<sup>1691</sup> Vitriol was one of the substances imported to Europe from Syria by the Venetians.<sup>1692</sup> Various kinds of vitriol are mentioned in Genizah documents as one of the commodities traded by the Genizah community in 11th century; it was mainly exported from Sicily to Cairo and Alexandria.<sup>1693</sup>

## Walnuts

*Juglans regia* (Juglandaceae), **A:** **jawz**<sup>1694</sup>

**D&H:** The tree originates in south-east Europe, Central Asia, and China. It apparently reached the Levant from Persia during the Persian or Hellenistic period. The scientific name means Jupiter's walnut. The walnut is an agricultural crop mentioned in the Bible and in the rabbinical literature, and there is no doubt as to its identification.<sup>1695</sup> It was a well-known medicinal plant even among classical physicians. Dioscorides, for example, describes the medical use of *Karua Basilika* to counteract poisons, dog bite and venom, to eliminate intestinal worms, and to treat

<sup>1689</sup> al-Qazwini, pp. 198–199. Cf. Ibn al-Baytar, al-Jami, II, p. 148; Leclerc, nos. 604, 1080, 1131. See also al-Antaki, pp. 158, 172, 180–181.

<sup>1690</sup> Reiani, nos. 176–178. Cf. Ben-Yakov, pp. 116, 197, 434.

<sup>1691</sup> al-Tamimi, p. 68. Amar & Seri, pp. 67–68.

<sup>1692</sup> Venice Laws; Prawer, Crusaders, p. 480.

<sup>1693</sup> Goitein, Society, I, p. 154. Gil, Kingdom, I, p. 560, III, p. 878, no. 567.

<sup>1694</sup> Issa, p. 120, no. 10; Plants & Animals, IX, p. 119; Uphof, p. 350.

<sup>1695</sup> On the walnut in Jewish sources see Feliks, Fruit Trees, pp. 168–173. On the history of the walnut see Goor, Fruits, pp. 271–282.

internal infections, gangrene, and purulent excretions.<sup>1696</sup> Because of the widespread and abundant use of the walnut in the region, and from an analysis of the sources, it may be inferred that when they use the general term 'jawz' the reference is to the walnut. Maimonides identifies the term 'jawz' primarily with 'jawz al-ma'kūl' (edible walnut) and with the walnut.<sup>1697</sup>

**PU:** Several kinds of walnut figure in 9 lists of *materia medica* (T-S Ar.35.327; T-S Ar.35.328; T-S Ar.39.450; T-S Ar.39.487; T-S AS 176.151; T-S AS 177.227; T-S AS 184.234; T-S NS 306.117; *jawza ṣaḥīḥa*, T-S Ar.30.274) and in 5 prescriptions: for cleaning or treating the teeth ([*murabbā*] T-S Ar.39.451), dressing bites (T-S NS 164.98), as an aphrodisiac (*shāmī*, T-S NS 164.159), and for unknown uses (T-S AS 182.242; *shāmī*, T-S Or.1081.1.66).

**TU:** Walnut is mentioned in general medical books (T-S Ar.39.443; T-S Ar.44.91; T-S NS 90.15) and in books dealing with sex (T-S Ar.44.79) and *materia medica* (T-S Ar.40.152; T-S Ar.43.132; T-S Ar.44.60; T-S Ar.44.204; T-S Or.1081.1.21), in a recipe for theriac (T-S Ar.42.29), in a letter about the science and teaching of medicine (T-S Ar.39.254), and in other fragments (T-S Or.1080.14.58).<sup>1698</sup>

**OMU:** al-Kindī reports the use of oil derived from the walnut which was a component in a medication for kidney disease and against haemorrhoids. Other parts of the tree served as components in medications for the stomach and liver, and against cough.<sup>1699</sup> According to Maimonides, the walnut is a healthy fruit to eat, effective against poisons and venom, and is listed among the hot and dry drugs.<sup>1700</sup> Ibn al-Bayṭār in his entry 'jawz' describes the tree and its medical uses. Among the more prominent uses that he collected from various physicians, he lists the following: the unripe fruit as a component in medications for improving eyesight and draining urine; the fruit covering (shell) to blacken the hair, to cure the limbs, and strengthen the gums; the nut (kernel) mainly to cure skin wounds and to improve facial skin; the leaves a component in medications to cure ear infections, to heat the kidneys, to soften the stomach, and to destroy stomach worms and lice; the tree resin to strengthen the

<sup>1696</sup> Dioscorides, I.178.

<sup>1697</sup> Maimonides, Glossaire, no. 82; Maimonides, Aphorisms, 23:102.

<sup>1698</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1699</sup> al-Kindī, nos. 3,22,32,109, 142, 148, 226. Cf. Ibn Sina, pp. 280–281.

<sup>1700</sup> Maimonides, Aphorisms, 20:51; 21:34, 76; Maimonides, Poisons, pp. 114, 132–134. Compare al-Ghafiḳī, no. 197.

stomach and cure wounds; and the shell mainly to regulate menstruation.<sup>1701</sup>

**TM:** For the Jews of Iraq the walnut was a component in various medications against cholera, bodily blemishes, and syphilis, and it also served to strengthen virility.<sup>1702</sup> In Iran and Iraq the walnut was also used for other medical purposes: the leaves were a constricting drug and a purgative, and improved digestion; the shell and leaves served to treat sexual diseases and infections of the digestive tract; walnut oil, among other things, was a carminative and a purgative, and strengthened the mind; the kernel was a strengthening drug, constricting, purgative, and nourishing;<sup>1703</sup> the fruit encasing was a constricting substance that served to cleanse the blood and to treat intestinal worms.<sup>1704</sup>

**TAI:** al-Muqaddasī states that the walnut was a widespread agricultural crop in the district of Falasṭīn in general and in the region of Jerusalem in particular.<sup>1705</sup> In the 10th and 12th centuries the walnut is mentioned among the crops of the al-Shām region.<sup>1706</sup> The Jewish pharmacist al-Kūhīn al-ʿAṭṭār al-Isrāʿīlī notes that the resin of the ʿal-Shāmīʿ (Levantine) walnut tree is the basis for manufacturing paint for wooden boards.<sup>1707</sup> Walnuts are mentioned in a few Genizah documents containing evidences of its being import into Egypt.<sup>1708</sup> The walnut is also mentioned in the list of products sold by the ʿaṭṭārīnʿ (medicine sellers) in Jerusalem during the Mamluk period.<sup>1709</sup> During the Crusader, Mamluk, and Ottoman periods in the region of al-Shām, the walnut appears in the list of crops grown, the list of purchases, in commercial documents, and in the testimonies of pilgrims.<sup>1710</sup> Dāwud al-Anṭākī informs us that the ʿShāmīʿ walnut tree reaches the age of 100 years and is used as a medicine against intestinal worms.<sup>1711</sup> Walnuts were grown in Syria

<sup>1701</sup> Ibn al-Baytar, al-Jami, I, pp. 173–175; Leclerc, no. 225. Cf. al-Biruni, I, p. 114.

<sup>1702</sup> Ben-Yakov, pp. 185, 193, 217, 248.

<sup>1703</sup> Hooper, p. 131. On the content of active substances see al-Rawi & Chaakravarty, pp. 55–56.

<sup>1704</sup> Uphof, p. 290.

<sup>1705</sup> al-Muqaddasi, pp. 166, 181.

<sup>1706</sup> al-Masʿudi, Tanbiyya, p. 20.

<sup>1707</sup> Kohen, al-Attar, p. 231. Similar uses are also mentioned in the Mishna: Shabbat 9:5.

<sup>1708</sup> Goitein, Society, I, pp. 121, 213. Gil, Kingdom, IV, p. 942: more than twenty documents listed in the index deal with walnuts.

<sup>1709</sup> Lutfi, p. 293.

<sup>1710</sup> For details of this subject and archaeobotanic findings see Amar, Production, pp. 30–31.

<sup>1711</sup> al-Antaki, pp. 109–110.

and exported and sold as foodstuff in Egypt and the Eastern Mediterranean region.<sup>1712</sup>

## Watermelon

*Citrullus lanatus* (Cucurbitaceae), **A: baṭṭikh**<sup>1713</sup>

**D&H:** Annual with long stem, the shiny fruits are used for eating due to their taste and sugar content. The watermelon originates in Africa, from the semi-desert regions of the savannahs, which is apparently the natural habitat of one of the wild species. The first evidence of its use is in ancient Egypt, on wall paintings and in papyri from the time of the 21st dynasty.<sup>1714</sup> It is mentioned in the Bible (Numbers 11:5) and in rabbinical literature (Mishna, Terumot, 3:1).<sup>1715</sup> Curative properties are ascribed to it on the authority of the Prophet Muḥammad, who ate watermelons and dates.<sup>1716</sup>

**PU:** Different products of watermelon figure in 3 lists of *materia medica* (T-S Ar.35.82; T-S Ar.39.136; T-S NS 321.49) and in 4 prescriptions: for the treatment of face and eyes (seeds, T-S Ar.35.363), treating urinary complaints (peel, T-S AS 152.90), a diet (T-S Ar.39.244) and for unknown uses (T-S AS 177.39).

**TU:** Watermelon is mentioned in general medical books (T-S Ar.11.13; T-S Ar.11.15; T-S Ar.43.98; T-S Ar.43.114; T-S Ar.43.191; T-S NS 222.22), in books on dermatology (T-S Ar.45.49) and fevers (T-S Ar.44.57), in pharmacopoeias (T-S Ar.44.205; T-S NS 22.43; T-S NS 164.30; T-S NS 222.60), in a recipe for dermatological and oral hygiene (T-S NS 327.90), and in other fragments (T-S Ar.38.40; T-S NS 297.14).<sup>1717</sup>

**OMU:** According to Maimonides the watermelon served as a purgative and its seeds were used to prepare a 'light and safe' medicinal drink. From the letters of Maimonides one learns that watermelon was listed among 'bad' foods and the dry and cold drugs.<sup>1718</sup> al-Ghāfiqī, in his entry 'Dullā', states that this applied to the 'baṭṭikh hindi' which served

<sup>1712</sup> Gil, Kingdom (see indices); Goitein, Society, I, pp. 121, 213.

<sup>1713</sup> Maimonides, Glossaire, nos. 54, 98, 332.

<sup>1714</sup> Watson, Innovation, p. 59.

<sup>1715</sup> Feliks, Plants, p. 16; Feliks, Kilayim, p. 49; Feliks, Yerushalmi, II, 451.

<sup>1716</sup> Ibn al-Qayyim, p. 187.

<sup>1717</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1718</sup> Maimonides, Aphorisms, 20:48; 21:79; Maimonides, Answers, 13; Maimonides, Regimen, 1:11; 2:10.

to cool the stomach and to thin the blood and phlegm.<sup>1719</sup> Dāwud al-Anṭākī notes that the ‘watermelon induces urine, opens blockages, and is effective against oedema and jaundice’. He also describes the use of watermelon to cure the kidneys, internal lesions, and bites.<sup>1720</sup>

**TM:** Watermelons are used for human consumption as well as for animals and other farm livestock. Edible oil is extracted from the seeds.<sup>1721</sup> In Iraq, watermelon juice is used as a diuretic, with the intention of reducing blood pressure. The seeds are a cooling, diuretic, and nourishing substance.<sup>1722</sup> The Jews of Iraq made extensive use of the watermelon to dissolve stones in the gall bladder and to treat skin and sexual diseases and various types of infection.<sup>1723</sup> In Europe, the roots of the watermelon were used as a purgative substance, and watermelon juice as a diuretic.<sup>1724</sup>

**TAI:** Maimonides and the Andalusian physician Abū al-Khayr al-Ishbīlī (11/12th cent.) mention the synonyms of the ‘dullā’<sup>9</sup>: ‘al-baṭṭīkh al-filasṭīnī’ and ‘al-baṭṭīkh al-shāmī’ (Syrian watermelon).<sup>1725</sup> This means that this species, which was used in Egypt for medical purposes, was imported from the Levant. Saladino d’Ascoli mentions the *Melones palaestinae* among ‘the things that are required for the shop of apothecary’<sup>1726</sup> In the Middle Ages watermelons were widely grown in the Levant.<sup>1727</sup> In the Land of Israel they were cultivated in the region of Jericho, the Hula Valley, and the other valleys,<sup>1728</sup> and were sold in the markets of Acre, Jaffa, Ramlah, and Jerusalem.<sup>1729</sup>

<sup>1719</sup> al-Ghafiqi, no. 237.

<sup>1720</sup> al-Antaki, p. 79. Cf. Ibn al-Baytar, al-Jami, I, 98–100; Leclerc, no. 303; Ibn Sina, p. 270.

<sup>1721</sup> Uphof, p. 133; Plants & Animals, XII, p. 69.

<sup>1722</sup> Hooper, p. 101; al-Rawi & Chaakravarty, p. 27, where the contents of active substances are listed.

<sup>1723</sup> Ben-Yakov. See collected references on p. 693.

<sup>1724</sup> Grieve, pp. 528–529.

<sup>1725</sup> al-Ishbili, p. 230; Maimonides, Glossaire, no. 98.

<sup>1726</sup> Saladino, p. 112.

<sup>1727</sup> al-Nuwayri, XI, p. 30; Estori ha-Parhi, p. 744. Discussion in: Amar, Estori, p. 266; al-Qalqashandi, p. 87; al-Umari (Fuad Sid ed.), p. 25.

<sup>1728</sup> For example E.g., Lewis, pp. 480, 484; Suriano, p. 38.

<sup>1729</sup> Ibn Jubayr, p. 314; Rochechouart, p. 70; Ya’ari, Travels, p. 280; Rauwolf, p. 270.

## Wax

### A: sham<sup>6</sup>

**D&H:** Wax is produced from the beeswax glands of young bees. It is secreted in liquid form and solidifies when it comes into contact with air.<sup>1730</sup> Its purpose is to create the honeycomb and to seal the cells that are filled with honey. Wax contains esters of fatty acids and sugars, and its melting point is 70°C.<sup>1731</sup> The ancient Egyptians used melted wax with oil as a base for ointments. In ancient Babylonia wax was used for various purposes, including the protection of copper from oxidization, preparation of concealed castings, preservation of food, and medicine.<sup>1732</sup> Classical physicians such as Hippocrates and Dioscorides describe the use of wax (*keros*) for various medical purposes, as well as its being a component in a preparation for dysentery.<sup>1733</sup> Wax is known to have been a commodity exported to Europe by the Crusaders.<sup>1734</sup>

**PU:** Several kinds of wax figure in 4 lists of *materia medica* (T-S Ar.11.16; T-S Ar.30.291; T-S Ar.35.328; T-S Ar.39.487) and in 11 prescriptions: for eye diseases (*ḥarīrī*, T-S Ar.44.162), as a depilatory for hairy women (T-S Ar.11.22), as an aphrodisiac (T-S NS 164.159), and for unknown uses (T-S Ar.43.238 [ointment]; T-S AS 117.4; T-S AS 169.297 [ointment]; T-S AS 181.127; T-S NS 265.62; T-S NS 297.260; T-S NS 306.134; yellow, T-S NS 222.34 [plaster]).

**TU:** Wax is mentioned in medical books in recipes for unknown recipes uses: wax mixed with oil was mentioned appears as a treatment for spreading ulcers accompanied with fever (T-S AS 177.291r), and wax mixed with castor oil and olive oil for skin application (T-S AS 180.162). It is also mentioned among simples used for the treatment of diseases affecting the legs and nails, sciatica, varicose veins, and venesection (T-S NS 306.172) and for convulsion and tetany, fever, and colic (T-S Ar.40.162). Wax was used to seal: a recipe for a substance to remove resin of sealing wax is given in one of the Genizah fragments (T-S AS

<sup>1730</sup> Putsiynakova.

<sup>1731</sup> *Plants & Animals*, XII, p. 271.

<sup>1732</sup> Levey, *Chemistry*, pp. 95–96.

<sup>1733</sup> Dioscorides, II.105.

<sup>1734</sup> Praver, *Crusaders*, p. 480.

176.831r) and in lexica of *materia medica* (T-S NS 306.134r; T-S AS 181.127r).<sup>1735</sup>

**OMU:** According to al-Kindī, white wax was a component in ointments and preparations for treating a hot and swollen liver, for wounds, mumps, and haemorrhoids.<sup>1736</sup> al-Kindī calls wax by another name, ‘mūm’, which is the name of one of the components in a preparation for treating burns and wounds, for immunity against poisons, and for hair loss.<sup>1737</sup> Shabbetai Donolo, the Italian physician, states that wax is a component used in dressings.<sup>1738</sup> Maimonides reports the widespread use of wax, which was a component in medications for external putrid wounds and to cool wounds and bruises.<sup>1739</sup> Ibn al-Baytār cites Ibn Sīnā describing the use of wax for medical purposes such as a component in poisons and to treat indigestion.<sup>1740</sup> R. Hayyim Vital describes the use of white wax, the oil of white wax, and green wax as components in medicines against haemorrhoids.<sup>1741</sup> Pure wax served as a component in an ointment to treat joint pains, and as another medication against haemorrhoids.<sup>1742</sup> Rabbi Moshe Basola (1521) describes the market of Safed and relates that one could buy wax there cheaply and profit from its sale abroad.<sup>1743</sup>

**TM:** Yemenite Jews used wax to soften and heal wounds and as a component in ointments.<sup>1744</sup> The Jews of Iraq also used it as a component in various medicines.<sup>1745</sup> In Iran and Iraq wax is sold in the markets and serves to prepare ointments and dressings.<sup>1746</sup>

**TAI:** Wax was sent to Tyre and stored there to be exported to various location around the Mediterranean<sup>1747</sup> It was traded and sold as an important commodity between the cities and ports of Tyre, Cairo, Ashkelon, Alexandria, Būṣīr, Mahdiyya, Qayrawān, and Mazara (Sicily). Its

<sup>1735</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>1736</sup> al-Kindi, nos. 224, 61, 76, 132.

<sup>1737</sup> Ibid., nos. 121, 122, 202. Cf. Ibn Sina, p. 403.

<sup>1738</sup> Donolo, p. 18. See entry on p. 65.

<sup>1739</sup> Maimonides, Aphorisms, 8:35; 21:93.

<sup>1740</sup> Ibn al-Baytar, al-Jami, III, pp. 78–79; Leclerc, no. 1340. Cf. al-Antaki, pp. 217–218.

<sup>1741</sup> Vital, Extracts, pp. 99, 108.

<sup>1742</sup> Ibid., pp. 104, 105.

<sup>1743</sup> Ya’ari, Travels, p. 139.

<sup>1744</sup> Reiani, no. 151/1.

<sup>1745</sup> See references in Ben-Yakov, p. 706.

<sup>1746</sup> Hooper, p. 195.

<sup>1747</sup> Gil, I, p. 196.

primary use however was for candles.<sup>1748</sup> Sicily was an important source for wax as well.<sup>1749</sup>

### Wild marjoram

Hyssop, *Origanum syriaca* = *Majorana syriaca* (Lamiaceae), **A:** za'tar, sa'tar, ša'tar

**D&H:** Wild marjoram is a perennial, Mediterranean dwarf shrub (up to 60 cm.) with hairy grey-green leaves and small white flowers. There are six varieties of wild marjoram, but only the *Origanum syriacum* grows in the Land of Israel.<sup>1750</sup> This plant is mentioned in the Bible in various contexts: in relation to the Passover in Egypt (Exodus, 12:22), purification of the leper (Leviticus, 14:4), the ashes of the red heifer (Numbers 19:6 and 18),<sup>1751</sup> and for its purgative qualities (Psalms, 51:9).<sup>1752</sup> Dioscorides states that the plant was used as a cure for dropsy, inflammations, excess urination, and to regulate menstruation.<sup>1753</sup> He also praises 'marjoram oil' which was brought from Egypt.<sup>1754</sup> From the Jewish Sages we learn that the plant was used as food as well as for ritual purposes. It seems that the name 'ezov' was a common term for certain plants which shared similar qualities and were all used as foods, sauces, and medicinal substances. The plant also appears in the folklore of other cultures in the region.<sup>1755</sup>

**PU:** Wild marjoram figures in 2 lists of *materia medica* (T-S Ar.35.328; T-S NS 325.127) and in 4 prescriptions: for fever (T-S NS 306.177), a diet (T-S Ar.41.71), and unknown uses (T-S Ar.30.291; T-S Ar.34.217 [2]).

**TU:** Wild marjoram is mentioned in a lexicon of *materia medica* (T-S Ar.45.51), in a general medical book (T-S Ar.43.252) and in books on

<sup>1748</sup> Gil, Kingdom, IV, 959; see more than 100 documents dealing with wax; Goitein, Society, I, pp. 60, 76, 125, 153–154, Gil, I, p. 492, no. 276.

<sup>1749</sup> Gil, Kingdom, I, p. 563.

<sup>1750</sup> Plants & Animals, XI, p. 79.

<sup>1751</sup> The Samaritans still use bunches of marjoram leaves to prevent blood clots, and maintain that 'za'atar for the blood is like water for sugar.' Experiments conducted by scientists at the Hebrew University have not confirmed this theory. On this subject in detail see Crowfoot & Baldensperger, p. 78.

<sup>1752</sup> For detailed identification of the biblical hyssop (sweet marjoram) see Feliks, World, pp. 177–178; Fleisher & Fleisher, Hyssop.

<sup>1753</sup> Dioscorides, III.30.

<sup>1754</sup> Ibid., I.58.

<sup>1755</sup> Palevitz et al., p. 22; Dafni, Mandrake, p. 12.



fevers (T-S Ar.44.91), dentistry (T-S Ar.42.39), and of *materia medica* (T-S Ar.40.60; T-S Ar.44.193; T-S Ar.44.204; T-S AS 178.81), in a pharmacopoeia (T-S Ar.45.19) and in other fragments (T-S Ar.38.15; T-S Ar.38.67).<sup>1756</sup>

**OMU:** The physician Assaf asserts that marjoram is used to cure many illnesses, mainly gynaecological, kidney and urinary tract disorders.<sup>1757</sup> Maimonides states that marjoram is an easily digested food<sup>1758</sup> and he cites al-Tamīmī that it was used to treat anaemia.<sup>1759</sup> al-Qazwīnī writes in his entry 'sa'tar' (wild marjoram) that it is a remedy for toothache, intestinal worms, and snakebite.<sup>1760</sup> In his entry 'marzanjūsh' (sweet marjoram) al-Qazwīnī attests to its good scent and says that it is used as a cure for migraines, headaches, constipation, and paralysis.<sup>1761</sup> Similar medicinal uses are described by Dāwud al-Anṭākī.<sup>1762</sup>

**TM:** Marjoram is used by the Arabs of Israel to relieve headache, cure gum inflammations, and whiten and strengthen the teeth. It is also used to ease cough, strengthen the heart, cure dizziness, expel worms, and treat internal inflammations of the stomach, lungs, and liver.<sup>1763</sup> Yeminite and Babylonian Jews made a medicinal tea from marjoram leaves to ease labour pains, as a general sedative, to cure heart pains, and to reduce body swellings, mainly in the legs. Marjoram was also used as a component in remedies to ease headaches, earache and stomach pains, and to disinfect the female sexual organs.<sup>1764</sup>

**TAI:** In a merchant's letter found in the Genizah (1065 CE) a Jewish trader named Ibn 'Alūsh al-Jazzār is mentioned as journeying from Tyre to Jerusalem and bringing different substances including 'hinna,' 'sa'tar,' and 'marqadūsh.' This last name is a misspelling of 'mardaqušh,' marjoram.<sup>1765</sup>

<sup>1756</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1757</sup> Assaph, IV.408.

<sup>1758</sup> Maimonides, Aphorisms, 20:49.

<sup>1759</sup> Ibid., no. 20:84.

<sup>1760</sup> al-Qazwini, p. 254.

<sup>1761</sup> Ibid., p. 262. Cf. Ibn Sina, p. 367.

<sup>1762</sup> al-Anṭaki, p. 292.

<sup>1763</sup> Palevitz et al., p. 21; Crowfoot & Baldensperger, p. 78.

<sup>1764</sup> Reiani, p. 30, no. 64; Ben-Yakov, pp. 77, 103, 116, 129 ff.

<sup>1765</sup> Goitein, Jewry, p. 204.

## Wormwood

*Artemisia* sp. (Asteraceae)

**D&H:** Aromatic perennial, with lance-shape leaves and small greenish flowerheads in long drooping clusters.<sup>1766</sup> Various species of wormwood are used in the region for curative purposes. The names and brief descriptions of the main species are given below (table 14):

Table 14 Wormwood species used for medicine

Common name	Scientific name	Arabic name	Short description and references
Absinthian wormwood	<i>Artemisia absinthium</i>	' <b>afsantīn</b>	A perennial plant that grows in Europe, North Africa, and North Asia. <sup>1767</sup>
Desert wormwood	<i>Artemisia sieberi</i>	<b>shīḥ</b>	A short aromatic shrub, very common in desert areas in the region. <sup>1768</sup>
Judean wormwood	<i>Artemisia judaica</i>	<b>wakhshīzak</b>	A short aromatic shrub, growing in the arid desert
Bushy wormwood, Southernwood	<i>Artemisia arborescens</i>	<b>shība</b>	An aromatic bush, ramified and apparently non-indigenous, which was introduced into the country by the Crusaders. Widespread mainly in the areas surrounding Crusader fortresses and in the region of Syria, Lebanon, and Jordan. <sup>1770</sup>

<sup>1766</sup> Chevallier, p. 171.

<sup>1767</sup> Hill, p. 257; Grieve, p. 858. Tarragon (*Artemisia dracunculus*) appears in a separate entry.

<sup>1768</sup> Maimonides, Glossaire, nos. 3, 63, 337; Issa, p. 22.

<sup>1769</sup> Identification according to al-Antaki, p. 339; Issa, p. 22, no. 7; Leclerc, no. 2271.

<sup>1770</sup> Plants & Animals, XI, pp. 152–154.

The plant is named after the goddess Artemis who (according to legend) discovered the properties of this plant and bestowed them on humankind. In the Bible wormwood is the symbol of evil and bitterness (Proverbs 5:4; Jeremiah 9:14; 23:15; Lamentations 3:15).<sup>1771</sup> The absinthian species of wormwood served in ancient Babylonia to treat diseases of the eyes and ears, swellings, coughs, bruises, and infections. It was also a component in an enema and was used for smoking.<sup>1772</sup> Dioscorides describes a few species of wormwood and notes their medical uses, such as helping digestion and treating diseases of the eyes, toothache, the liver, the stomach, and the spleen. All the species are hot and astringent drugs.<sup>1773</sup> In the Babylonian Talmud there is mention of a wine with the aroma of absinthian wormwood (Aboda Zara, 30a).

**PU:** Different kinds of wormwood figure in 2 lists of *materia medica* (*shiba*, T-S AS 180.199; *wakhshīzak*, T-S AS 183.159) and in 4 prescriptions for unknown uses (*shih*, T-S NS 265.62; *'aṣantīn*, T-S AS 177.417; T-S NS 164.88; T-S Or.1081.J.39; T-S 13J6.14).

**TU:** Absinth is mentioned in medical books in recipes for the treatment of diseases related to the digestive system (part of medical text; T-S AS 82.71) and in cases of poisoning (in treatment of worm and piles; T-S AS 178.179). It also appears in a lexicon of *materia medica* (T-S Ar.41.61) and as a simple in a compound for unknown uses (T-S AS 177.417). Tarragon extracts were used to treat patients with bubo and scrofula (T-S Ar.39.297). Abrotanum (female; T-S Ar.39.351) and wormwood (T-S Ar.39.381) were also mentioned in recipes, one of which quotes Galen (T-S Ar.41.13).<sup>1774</sup>

**OMU:** al-Kindī describes the use of absinthian wormwood mainly for reducing swellings in the spleen.<sup>1775</sup> Desert wormwood served as a component in a medication against caries, which was intended to polish the teeth, to sweeten the breath, and to keep the mouth and teeth clean.<sup>1776</sup> Shabbetai Donolo notes that wormwood is listed among plant species usually used for medical purposes.<sup>1777</sup> Maimonides describes the use of 'Greek wormwood' as a component in a medication to arouse sexual desire in men. It is a hot and dry drug, as is desert wormwood.<sup>1778</sup> Ibn

<sup>1771</sup> Additional sources are in Feliks, World, p. 200.

<sup>1772</sup> al-Kindi, p. 233.

<sup>1773</sup> Dioscorides, III.26–29, with identification of the species according to the editor.

<sup>1774</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1775</sup> al-Kindi, nos. 5,7,36, 59, 60. Cf. Ibn Sina, pp. 244–245.

<sup>1776</sup> al-Kindi, no. 337.

<sup>1777</sup> Donolo, p. 22.

<sup>1778</sup> Maimonides, Sexual, 10; Maimonides, Aphorisms, 21: 70, 80.

al-Bayṭār, in his entry Absinthian wormwood, reports that the plant served, among other things, as a medication against scorpion stings.<sup>1779</sup> In the entry desert wormwood Ibn al-Bayṭār cites Dioscorides who describes the use of the plant for constriction and for stopping blood haemorrhages.<sup>1780</sup> Al-Qazwīnī describes desert wormwood and cites Ibn Sīnā in connection with its medical uses: to eliminate intestinal worms, for baldness, for coagulating wounds, and for treating poisons from the bites and stings of venomous creatures.<sup>1781</sup> Dāwud al-Anṭākī, in his entry Judean wormwood, writes that the plant serves as a hot and dry drug, and as a component in a medication to treat coughs, hiccups, bad odours, kidney stones, suspended urination, intestinal worms, paralysis, muscle weakness, and joint pains.<sup>1782</sup>

**TM:** Desert wormwood has a few medical uses among the Arabs of Israel and the Bedouins, among them treating stomach ache, cough, chills, heart pains, dissolving blood clots, increasing virility, soothing nerves, and eliminating stomach worms.<sup>1783</sup> Judean wormwood is used by the Bedouin in Israel, Sinai, and Egypt for treating stomach ache, constipation, stomach worms, and scabies, and also to strengthen the appetite and the body during pregnancy.<sup>1784</sup>

Bushy wormwood serves Yemenite Jews to strengthen the stomach, to treat vomiting and kidney stones, and to disinfect the urinary tract and sexual organs. It also serves as a sexual stimulant and to cure wounds and colds.<sup>1785</sup> Among the Arabs of Israel, the plant is used to reduce fever, to eliminate stomach worms, and for strengthening. Crowfoot reports that he saw this plant on Mount Carmel.<sup>1786</sup> In Iraq and Iran varieties of wormwood are used to soothe stomach pains, to increase appetite, and to improve digestion.<sup>1787</sup> The Jews of Iraq used absinthian wormwood in a preparation against nausea, fever, German measles, chicken pox, sores, and intestinal worms.<sup>1788</sup>

<sup>1779</sup> Ibn al-Baytar, al-Jami, I, pp. 41–44; Leclerc, no. 113; al-Antaki, pp. 51–52.

<sup>1780</sup> Ibn al-Baytar, al-Jami, III, p. 75; Leclerc, no. 1372.

<sup>1781</sup> al-Qazwini, p. 254.

<sup>1782</sup> al-Antaki, p. 339. Cf. al-Ghafiqi, no. 278.

<sup>1783</sup> Crowfoot & Baldensperger, p. 85.

<sup>1784</sup> Dafni, Mandrakes, p. 47; Levey, Beduins, p. 80; Osborn, p. 175.

<sup>1785</sup> Reiani, no. 13.

<sup>1786</sup> Crowfoot & Baldensperger, p. 85.

<sup>1787</sup> Hooper, pp. 87–88; al-Rawi & Chaakravarty, p. 15, who also note the content of active substances.

<sup>1788</sup> Ben-Yakov, pp. 78, 84, 98, 153, 193, 335. Medical uses of wormwood species in Europe are given in Grieve, pp. 858–861.

**TAI:** Ibn al-Bayṭār writes that ‘wormwood’ refers to absinthian wormwood common to the Levant.<sup>1789</sup> Al-Bīrūnī notes that the source of the excellent absinthian wormwood is Greater Syria.<sup>1790</sup> al-Ghāfiqī cites this statement verbatim.<sup>1791</sup> al-Ghazzī also states that Greater Syria is one of the sources for absinthian wormwood. The leaves of the plant, he maintains, served as an astringent and diuretic drug, also effective against intoxication and skin diseases.<sup>1792</sup> Dāwud al-Anṭākī mentions Judean wormwood as very widespread in Egypt and in the Levant. He claims that the source of the name is Persian, and it means worm killer.<sup>1793</sup>

## Zinc

*Zincum-oxidat* (Zn), **A:** *tūtiyā*<sup>1794</sup>

**D&H:** Zinc is found in nature as a hard, bluish-white metallic element (Zn, no. 30). It appears in nature as calamine (ZnCO<sub>3</sub>) and sulphide (ZnS) from which it is manufactured by industrial processes such as smelting and refining.<sup>1795</sup> Modern scholars agree that the medieval ‘tūtyā’ in its narrow sense means zinc at different stages of oxidation. Though the term includes other oxidized metals,<sup>1796</sup> we agree with this statement. Zinc has been medicinally used since early times in various ancient civilizations including the Babylonian<sup>1797</sup> and the Roman. The Greek physician Dioscorides describes the medicinal uses of *diphryges* as a cure for skin diseases, wounds, and tumours. Those uses were due to its drying and cooling qualities.<sup>1798</sup>

**PU:** Different kinds of zinc figure in 8 lists of *materia medica* (T-S Ar.30.274; T-S AS 176.22; T-S NS 279.57; T-S NS 305.69; T-S NS 321.49; Ṭṣfahānī, T-S Ar.43.317; green, T-S Ar.43.317; Indian, T-S NS 321.49) and in 7 prescriptions: for treating lice (T-S Ar.43.54; sea, T-S Ar.43.54), weak eyesight and migraine [Maimonides; *rummān*, T-S Ar.30.286 [2]],

<sup>1789</sup> Ibn al-Baytar, al-Jami, I, pp. 41–44; Leclerc, no. 113.

<sup>1790</sup> al-Biruni, II, 97–98.

<sup>1791</sup> al-Ghafiqi, no. 27.

<sup>1792</sup> Hamarneh, Plants, p. 240.

<sup>1793</sup> al-Antaki, p. 339.

<sup>1794</sup> Maimonides, Glossaire, no. 382.

<sup>1795</sup> HE, I, p. 24.

<sup>1796</sup> al-Kindi, p. 250, no. 55. On the names of substances in medieval times see Maimonides, Glossaire, nos. 342, 382.

<sup>1797</sup> al-Kindi, p. 250, no. 55.

<sup>1798</sup> Dioscorides, V.120.

cough (T-S K25.116), and eye diseases (green, T-S Ar.44.162; karmānī, T-S Ar.44.162). In two letters from Tripoli and Alexandria to Cairo zinc is mentioned as an eye treatment (Bodl. MS Heb c 28,f.40; Bodl. MS Heb d. 66, f. 60).<sup>1799</sup>

**TU:** Zinc oxide appears in medical books as a simple in a list of substances used for the treatment of eye diseases. The list, according to Isaacs, was copied from 'Alī b. 'Īsā's *'Tadhkirat al-kaḥḥālīn'* (T-S NS 306.48r). Zinc (tutty) is mentioned as one of the simples in a recipe to treat eye complaints such as redness, itching, and excessive lachrymation (T-S Ar.39.228) and in a general list of simples (T-S Ar.41.45) and for unknown uses after cupping (T-S AS 166.238; T-S AS 166.236–237). Zinc salts are among several substances found in a Genizah recipe for the treatment of 'excessive lachrymation due to laughing, crying, exposure to heat or cold winds' (T-S Ar.42.5).<sup>1800</sup>

**OMU:** al-Tamīmī reports that 'tūtyā' was collected on seashores along the coast of Lebanon and was used to treat eye diseases.<sup>1801</sup> al-Kindī writes that zinc is used in many remedies for the treatment of eye diseases, mainly to reduce humidity, to clear cataracts, and to improve the eyesight.<sup>1802</sup> Both Maimonides and al-Bīrūnī were of the opinion that zinc should be used to cure external cancerous sores.<sup>1803</sup> Benevenutus describes a Jerusalemite remedy for the treatment of the eyes. Among the different substances he mentions white wine and 'tūtyā', and in a different remedy he mentions 'Alexandrine tūtiyā', rose leaves and white wine as a cure for other eye diseases.<sup>1804</sup> Al-Qazwīnī relates about different kinds of zinc (white, yellow, and green) and points out that their origin is the Indian Ocean and its shores (e.g., Yemen). One of the practical medicinal uses of zinc was to eliminate bad smells (sweat and urine).<sup>1805</sup>

**TM:** Yemenite Jews used zinc sulphate (ZnSO<sub>4</sub>), which they name 'tūtyā', to treat eye diseases, cancerous wounds, and wounds of the sexual

<sup>1799</sup> Gil, III, p. 217, no. 496; Gil, Kingdom, III, p. 432, no. 426.

<sup>1800</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1801</sup> al-Tamimi, p. 102, a-b. Amar & Seri, pp. 38–39.

<sup>1802</sup> al-Kindi, nos. 151, 157–159, 163, 165, 168, 174, 178. Cf. Ibn al-Baytar, al-Jami, I, pp. 143–145; Leclerc, no. 437. Cf. also al-Antaki, pp. 98–99; al-Biruni, II, pp. 22–23.

<sup>1803</sup> Maimonides, Aphorisms, 9:30, 111; 16:55; al-Biruni I, pp. 95–96.

<sup>1804</sup> Benevenutus, pp. 19, 42. Regarding the problematics of the source see Introduction.

<sup>1805</sup> al-Qazwini, p. 188.

organs.<sup>1806</sup> Babylonian Jews used zinc for external uses such as the treatment of cutaneous leishmaniasis, eye diseases, and swollen lips.<sup>1807</sup>

**TAI:** al-Tamīmī reports that zinc was collected on sea shores near Tyre, Beirut, and other cities along the coast of Lebanon, and was used to treat eye diseases. He states that this kind of ‘tūtyā’ was inferior to the ‘maḥmūdī’ kind brought from the Maghreb.<sup>1808</sup> Several documents, namely letters, describe the trade in few kinds of zinc in Egypt, Sicily, and other locations, mainly for medicinal uses (treating eye diseases).<sup>1809</sup>

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<sup>1806</sup> Reiani, no. 176.

<sup>1807</sup> Ben-Yakov, pp. 87, 178, 280.

<sup>1808</sup> al-Tamimi, p. 102, a–b; Amar & Seri, pp. 38–39.

<sup>1809</sup> Gil, III, P. 217, no. 496. Gil, Kingdom, II, p. 676, no. 231. Dietrich, Egypt. Ben-Sasson, pp. 238, 240.

## CHAPTER SEVEN

### *MATERIA MEDICA*: CONCISE ITEMS

Formula for the concise entries of medicinal substances

The standard order of the concise entries is:

English name

Synonyms, scientific name (botanical family), **A:** (Arabic name)

**D&H:** Description and history.

**PU:** Practical uses (original lists of *materia medica* compiled by pharmacists and prescriptions formulated by physicians in Arabic, Judaeo-Arabic, and Hebrew).

**TU:** Theoretical uses extracted from medical books, pharmacy books, and notebooks found in the Genizah. These were the professional literature that physicians as well as pharmacists used (based mainly on Isaacs' catalogue, unpublished cards, and new documents).

**OMU:** Other medieval medicinal uses.

**TM:** Traditional uses recorded among inhabitants of various geographic areas and ethnic groups in the Middle East.

**TAI:** Trade, agriculture, and industry

#### **Acacia**

*Acacia* sp. (Mimosaceae), **A:** 'aqāqiyā, (*tree*) **sant**<sup>1</sup>

**D&H:** The acacia species includes 750 varieties of trees and shrubs widespread throughout tropical and sub-tropical regions. Most of them grow in desert areas, and some of the trees and shrubs are thorny. The main species that flourish in this region are *Acacia albida*, *Acacia raddiana*, *Acacia tortilis*, and *Acacia gerrardii*.<sup>2</sup> Gum Arabic was made mainly out of the resin of *Acacia nilotica*. Acacia gum was widely used in Egypt from the second millennium BCE, and in Sudan during the first century CE.

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<sup>1</sup> Maimonides, Glossaire, p. 10, no. 12; p. 80, no. 278.

<sup>2</sup> Plants & Animals, X, pp. 141–145; Morton, p. 137. For synonyms see Dinsmore & Dalman, nos. 654–657; Issa, p. 1, no. 3.



The Talmud mentions the use of ‘akakia’ (acacia gum) for remedial purposes and as a contraceptive. Because of its low cost and its appearance, acacia gum was sometimes used as an imitation for the more expensive myrrh and frankincense. Dioscorides mentions *akakia*, identified as *Acacia vera*, claiming that it grew in Egypt and noting especially the use of its gum to cure diseases of the eyes and intestines, as well as mouth sores, and to dye the hair black.<sup>3</sup>

**PU:** Acacia figures in a list of *materia medica* (T-S NS 321.49).

**TU:** Acacia is also mentioned in several fragments, mainly from books, and in recipes for the treatment of children with umbilical hernia and incessant crying (T-S Ar.40.160), septic conditions near the ear (ointment; T-S NS 164.62r), and roughness in the eye (collyrium; T-S NS 222.18). Different kinds of acacia feature in recipes for unknown uses (T-S AS 178.225; T-S AS 179.26), one of which begins with the *basmalah* followed by *al-shāfi* – the only healer (T-S Ar.42.152v); and in lists of *materia medica* (T-S AS 170.136; T-S AS 182.183; T-S AS 183.159), one of which concerns eye diseases and was copied, according to Isaacs, with some variation from ‘Ali b. ‘Īsā’s *Tadhkirat al-Kaḥḥālīn* (ed. Hyderabad, p. 347; T-S NS 306.48r) and another is in a recipe for the treatment of swelling of the ear, citing Ibn Sinā and al-Jawharī (T-S AS 187.197).<sup>4</sup>

**OMU:** According to al-Kindī, ‘aqāqyā’ was a preparation for the teeth and for wounds; Maimonides quotes al-Tamīmī and notes that the ‘aqāqyā’ was a component in a medication for fracture. The ‘juice of acacia seed pods’ was used as a component in a preparation to strengthen the penis, as well as in a preparation to restore virginity. The ‘aqāqyā’ (juices of the fruit and seed pod) and ‘gumi arabica’ were considered a hot and dry drug.<sup>5</sup>

**TAI:** A letter dated 1110 CE found in the Genizah and sent by Natan ha-Kohen of Ashkelon to Ola ha-Levi in Fustat describes a consignment of ‘rub al-sant’ (acacia concentrate) sent from Ashkelon to Egypt. Other letters of merchants (mainly of the 11th century) attest that different products of acacia, mainly *sayyāla* (probably resin of *Acacia seyal*),<sup>6</sup> were traded between the cities of Alexandria, Būšīr, Cairo, and Mah-diyya. Tahertsant was traded in Alexandria and Cairo as well.<sup>7</sup>

<sup>3</sup> Dioscorides, I.101.

<sup>4</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>5</sup> Maimonides, Aphorisms, 9:123; 13:13; 21:73, 78; Maimonides, Sexual, 8:11; 17:2.

<sup>6</sup> Issa, p. 3, no. 4.

<sup>7</sup> Gil, III, p. 485, no. 588. See also Goitein, Society and Gil, Kingdom Indices.

**Adder**

Ter, *Echis coloratus* (Viperidae), **A:** 'afā<sup>8</sup>

**D&H:** A poisonous reptile of the viper species. It is 80 cm. long and weighs 180 grams. Its natural habitat is the desert, mainly in the eastern and southern parts of Israel to Sinai in the south. Its venom is dangerous to humans, even deadly. Its bite mechanism is highly sophisticated to ensure the effective penetration of the poison concentrated in the large glands inside its cheeks. The poison contains substances causing haemorrhage and neurotoxic reactions.<sup>9</sup> For centuries snakes and healing have been closely associated in different religions and cultures around the world. The image of Serapis, an Egyptian god, and his temple, the Serapion, are linked with the snake. The Bible describes the brazen serpent made by Moses at God's command (Numbers 21:1–6) which was raised up on a pole so that whoever was bitten by a poisonous snake could gaze at it and be cured. Asclepius, the Greek god of healing, whose temple was used in Roman times also as a hospital, was associated with the snake image.<sup>10</sup> The adder is mentioned in the Bible and the Jewish Sages described the Roman use of the snake as an antidote to snake poisoning. The adder is a frequent subject in scientific and sacred literature and in Arabic poetry.<sup>11</sup>

**PU:** Adder figures in a prescription for unknown uses (T-S Or. 1081.1.66).

**TU:** Adder is also mentioned also in general medical book (T-S NS 327.21) and another fragment (T-S Or.1080.13.33).<sup>12</sup>

**OMU:** The medicinal uses of the adder were long well-known, especially in medieval times. Many scholars and pilgrims describe in detail the capture and preparation of the adder for medicinal purposes, and it is often referred to as the 'Dead Sea Monster'.<sup>13</sup> Its flesh was used mainly to prepare theriac, a remedy for poisoning from bites and stings and for a wide variety of other diseases. Maimonides recommends eating adder meat as a 'wonder cure' for leprosy. The skin of the adder ground with honey was a highly valued medication of alopecia.<sup>14</sup> Ibn

<sup>8</sup> A general Arabic term for poisonous reptiles, mainly used for the adder.

<sup>9</sup> Plants & Animals, V, pp. 152–153, 165.

<sup>10</sup> Maimonides, Poisons, pp. 24–75; Margalit; Levkowitz.

<sup>11</sup> *EL*, entry 'Afa'a.

<sup>12</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>13</sup> Nissenbaum, Monster; Amar Theriac.

<sup>14</sup> Maimonides, Aphorisms, 9:108; 21: 53, 55; 22:2. Cf. al-Ghāfiqī, no. 113.

al-Bayṭār reviews the medicinal uses of the adder in classical medical literature and reports certain cases that proved the remedial qualities of snake meat for skin diseases such as leprosy, and for debilitation and other infirmities.<sup>15</sup> Jacques de Vitry, Bishop of Acre (13th century) states that it was used in the preparation of the above-mentioned famous remedy theriac for treating all kinds of poison except that of the adder itself.<sup>16</sup> The traveller Ernoul, who visited the Holy Land in 1231, writes of a certain field in the vicinity of Jericho where adders were captured and sold to pharmacists.<sup>17</sup> Ludolph von Suchem, who went to the Holy Land in 1340, describes the adder (Tyros) of the Judean desert and lists its medicinal uses.<sup>18</sup> Similarly, the three Italian travellers, Frescobaldi, Gucci, and Sigoli, who visited the Holy Land in 1384, describe the ruins of Jericho and the snake hunted there for the preparation of theriac.<sup>19</sup> The Sinai Bedouins use the adder to treat impotence, and among the Negev Bedouins the slough is commonly used to treat allergies and to expel the fear of snakes.<sup>20</sup> Yemenite Jews used adder meat as an antidote for snake bites.<sup>21</sup>

**TAI:** Felix Fabri informs us that the Mamluk authorities forbade the entry of foreigners to the desert regions for fear that ‘the noble, poisonous adder would be captured, stolen and become extinct’. He mentions that the ruler recognized the importance of the adder for the famous antidote theriac, which was produced from it and which is the source of its name: Tyr or Ter. Fabri relates how the poorer people disobey the ruler’s command and ‘sell the snake to Christian traders in Damascus and Beirut and even in Alexandria and Cairo’.<sup>22</sup>

## Agate

### A: ‘aqīq

**D&H:** Precious stone which was also used for medicine, sometimes when burnt.

**PU:** Agate appears in a prescription for unknown uses (T-S Ar.39.451).

<sup>15</sup> Ibn al-Baytar, al-Jami, 1; pp. 46–48; Leclerc, no. 120; al-Antaki, pp. 52–53.

<sup>16</sup> Bodenheimer, II, pp. 203–204; *PPTS*, X, p. 676.

<sup>17</sup> *Ibid.*, IV, p. 69.

<sup>18</sup> *Ibid.*, XII, p. 136.

<sup>19</sup> Frescobaldi, p. 42.

<sup>20</sup> Levey, Beduins, p. 86; Abu-Rabia, p. 24.

<sup>21</sup> Reiani, no. 158.

<sup>22</sup> *PPTS*, II, pp. 151–153.

**TU:** Agate is mentioned in an unidentified medical book (T-S Ar.43.172) and another fragment (T-S NS 297.56).<sup>23</sup>

**OMU:** Ibn al-Bayṭār describes various medicinal uses of agate, including dispelling fear, stopping bleeding, mainly of women, treatment of caries and tooth cavities, shining the teeth, preventing gums from bleeding, and strengthening them.<sup>24</sup>

**TM:** In Iraq, local people believed that the agate could staunch bleeding from wounds so it was a common ornament on scabbards.<sup>25</sup>

**TAI:** Agate was a commodity in the Mediterranean area.<sup>26</sup> Several private letters reveal that the agate was bought in Cairo and sent to Jerusalem.<sup>27</sup>

## Agrimony

Liverwort, *Agrimonia eupatoria* (Rosaceae), **A:** **ghāfit**

**D&H:** Perennial with long feathery leaves and yellow flowers. Grows in wet habitats near rivers and springs in the Mediterranean as well as Euro-Siberian phyto-geographical zones; in the Levant it grows in northern Israel and Lebanon.<sup>28, 29</sup> Pliny and Dioscorides mention the plant (*Eupatorios*) and note its use against stomach ulcers, dysentery, and snakebite.<sup>30</sup> The scientific species name was given to it in memory of Mithridates Eupator, king of the Pontus, who was familiar with medicinal plants and also engaged in compounding medicines.<sup>31</sup>

**PU:** Agrimony features in a list of *materia medica* (T-S AS 184.234).

**TU:** Agrimony also appears in medical books (T-S Ar.43.98; T-S Ar.44.57), on fevers (T-S NS 222.31), on *materia medica* (T-S Ar.44.204), in pharmacopoeias (T-S Ar.45.33; T-S NS 222.43), and in other fragments (T-S NS 297.114; T-S NS 297.125).<sup>32</sup>

<sup>23</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>24</sup> Ibn al-Baytar, al-Jami, III, p. 128.

<sup>25</sup> Qafra, p. 20.

<sup>26</sup> Gil, Kingdom, II, p. 813, no. 273, p. 852, no. 284, IV, p. 934: 25 documents mentioning agate were found.

<sup>27</sup> Gil, III, p. 168, no. 481, p. 226, no. 498.

<sup>28</sup> Kohen & Shemid'a, Rare, pp. 89–92.

<sup>29</sup> Maimonides, Glossaire, no. 403; Issa, p. 7, no. 11.

<sup>30</sup> Dioscorides, IV.41. According to the picture and editor's identification this is not a species of agrimony but the plant *Eupatorium cannabinum*. See Grieve, pp. 14–15.

<sup>31</sup> Description: Feinbrun-Dothan, p. 284; Kohen & Shemid'a, Rare, pp. 89–92.

<sup>32</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

**OMU:** The physician Assaf describes agrimony and its uses against poisons, stings, and bites. The plant was also used to treat the liver, kidneys, and eyes, and as a medication against cough.<sup>33</sup> According to al-Kindī the plant was a component in a preparation to reduce fever and cure jaundice.<sup>34</sup> Maimonides refers to agrimony as a separate medicine, hot and dry, used against bites from poisonous creatures.<sup>35</sup> Ibn al-Baytār notes that the plant served to cure wounds and liver and stomach diseases, mainly in Iraq, Syria, and Egypt.<sup>36</sup>

**TM:** In Iraq, agrimony served as a strengthening drug, a diuretic, for constriction, eliminating worms, and stimulating menstruation.<sup>37</sup> In traditional medicine in the Middle East and the Maghreb countries (North Africa), the plant is used mainly to treat diseases of the throat and intestines.<sup>38</sup> In England and Scotland it is found in profusion along river banks and is used in traditional medicine to treat diseases of the skin and intestines. Other plants have also been termed agrimony.<sup>39</sup> In the Middle Ages agrimony was used to cure jaundice and liver diseases.<sup>40</sup>

## Aajava

*Carum copticum* (Apiaceae), **A:** *nākhuwāh*<sup>41</sup>

**D&H:** A few varieties of caraway were used in the ancient world as spice and incense plants. According to Dioscorides, the *Karos* was a plant with seeds that served to treat the stomach and to prepare a medication against bites and stings. Its root was used as food.<sup>42</sup> Certain researchers identify ‘karbas’, which appears in the Mishna with a species of caraway (Kilayim, 2:5). One of the caraway species is mentioned in the Talmud as a medicine for the stomach (Bab. Talmud, Aboda Zara, 29a).

**PU:** Aajava figures in a list of *materia medica* (T-S Ar.35.137).

**TU:** Aajava is mentioned in fragments of books in recipes for cough, colds, indigestion, haemorrhoids, stomach ailments, and colic (T-S Ar.11.11;

<sup>33</sup> Assaph, IV, 418.

<sup>34</sup> al-Kindi, no. 112. Cf. Ibn Sina, pp. 468–469.

<sup>35</sup> Maimonides, Poisons, p. 108; Maimonides, Aphorisms, 9:88.

<sup>36</sup> Ibn al-Baytar, al-Jami, III, pp. 144–155; Leclerc, no. 1618.

<sup>37</sup> al-Rawi & Chaakravarty, pp. 8–9.

<sup>38</sup> Ducros, p. 98, no. 171.

<sup>39</sup> Grieve, pp. 13–14.

<sup>40</sup> Hill, Agrimony; Uphof, p. 19.

<sup>41</sup> Issa, p. 41, no. 3.

<sup>42</sup> Dioscorides, III.66.

T-S Ar.41.81; T-S Ar.42.199; T-S Ar.44.187; T-S Ar.45.28). It also appears in general medical books (T-S Ar.40.5; T-S Ar.44.148; T-S Ar.44.149; T-S NS 305.3), some on paediatrics (T-S Ar.40.160), on ophthalmology (T-S Ar.41.24), *materia medica* (T-S Ar.39.478), in pharmacopoeias (T-S NS 90.61; T-S Or.1080.3.39; T-S Or.1081.1.6), and in other fragments (T-S NS 228.14; T-S Ar.39.472).<sup>43</sup>

**OMU:** Maimonides describes the ajava as a hot and dry substance.<sup>44</sup> R. Nathan ben Yoel Falaquera (13th century) recommends the use of the plant as a diuretic, for the treatment of skin diseases, bites, and internal diseases (liver, stomach), and to clear obstructions in the urinary tract.<sup>45</sup>

**TM:** Coptic caraway was used by Yemenite Jews to treat swellings, infections, bites, cough, colds, kidney stones, and haemorrhage.<sup>46</sup>

## Ambergris

Sperm whale secretion, *Physter catodom* (Physeteridae), **A:** 'anbar'<sup>47</sup>

**D&H:** Ambergris is a perfumed substance with a sweet scent similar to musk. It is inflammable and burns with a bright flame. It is highly valued in the East as a perfume and a medicinal substance.<sup>48</sup> Ambergris floats on the surface of tropical seas or is found cast upon the shore in large lumps that weigh up to five kilograms. It apparently derives from the bile secretions of the sperm whale.<sup>49</sup> Dioscorides claims that ambergris (*lungourion*) is suitable as a medicine for treating stomach and intestinal problems.<sup>50</sup>

**PU:** Ambergris figures in a list of *materia medica* (T-S Ar.43.317) and in a prescription for a linctus and an ointment (T-S AS 147.192).

**TU:** Ambergris is also mentioned in books, as one of the substances in recipes for the treatment of headaches and diseases of the brain (T-S Ar.40.157); aphasia, muscle spasms, tension, trembling, and facial palsy

<sup>43</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>44</sup> Maimonides, Aphorisms, 21:80.

<sup>45</sup> Amar & Buchman, p. 215.

<sup>46</sup> Reiani, no. 23. Cf. Uphof, p. 109; Hooper, p. 95, who notes additional species.

<sup>47</sup> The same name refers sometimes to petrified vegetal resin which was applied for similar uses, so the distinction between the substances is not always clear cut.

<sup>48</sup> Riddle, Ambergris; Riddle, Amber.

<sup>49</sup> EI, entry 'Ambergris'.

<sup>50</sup> Dioscorides, II.100; al-Kindi, p. 307, no. 209.

(T-S AS 144.306); obstruction, wind, diarrhoea, pleurisy, and trembling (T-S AS 179.123). It also appears in lists and lexica of *materia medica* (T-S Ar.43.132; T-S AS 182.303), recipes for unknown uses (T-S Ar.40.57; T-S AS 179.283), and a quasi-medical recipe (T-S Ar.11.12).<sup>51</sup>

**OMU:** al-Tamīmī, in his book *Ṭīb al-‘arūs* (the bride’s perfume) describes the preparation of the ‘nadd’ (a perfume made of musk and ambergris) which was made by the mother of the Abbasid Caliph al-Muqtadir (908–932 CE) and was offered as incense on the rock of the Temple Mount in Jerusalem every Friday. al-Tamīmī adds: “The headman of the servants used to give my father some of this “nadd” and he used to melt it in “bān” (oil of the fruit of the ben tree) and thus produce “ghāliya” (a perfumed mixture) which was of an incomparable scent.”<sup>52</sup> According to al-Kindī, ambergris was a component in the medication for sore throat as well as a perfume.<sup>53</sup> Maimonides reports that it was a substance that strengthened body and spirit with its good scent and, citing Ibn Sinā, that it was a component in a formula for heart medicine. Ambergris was considered a hot and dry drug.<sup>54</sup> Ibn al-Bayṭār in his ‘Ambergris’ entry cites various doctors in connection with this substance. It can strengthen the heart and brain, and cure semi-paralysis of the body and face; it is beneficial for the aged, for the brain, for the senses, and for the heart; for bandaging joints in cases of joint pains, curing mental diseases and paralysis, and fortifying the mind, senses and heart. Used internally in minimal doses, it is beneficial for the aged (because of its warm colouring), but in larger doses it is harmful to the body and can be fatal.<sup>55</sup>

**TAI:** The scholar al-Mas‘ūdī (10th century) notes that ambergris is to be found on the seashores of the cities of al-Shām.<sup>56</sup> Many fragments deal with this expensive commodity and its trade, especially in the 11th century, between Cairo, Qayrawān, Mahdiyya, Alexandria, Palermo, the Maghreb and even Spain.<sup>57</sup> Among the biggest 11th-century traders were Isaac Nisabūrī, of Persian origin, who resided in Alexandria, Nahray b. Nissim, a wholesaler of high standing living in Fustat, and Ulla

<sup>51</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>52</sup> Amar & Seri, p. 51; al-Nuwayri, 12, p. 64.

<sup>53</sup> al-Kindi, no. 77.

<sup>54</sup> Maimonides, Aphorisms, 21:75; Maimonides, Regimen, 2:20; Maimonides, Answers, 3:19; al-Qazwīnī, pp. 214–215.

<sup>55</sup> al-Qazwīnī, pp. 214–215.

<sup>56</sup> al-Mas‘udi, I, p. 366.

<sup>57</sup> Gil, Kingdom, I, p. 693, IV, p. 934, see indices; Ben-Sasson, p. 445, no. 92, p. 508, no. 103.

ha-Levi b. Joseph of Damascus. All of them dealt in ambergris, among other commodities.<sup>58</sup> Ambergris was one of the perfumes that were an important part of the East-West trade in the Crusader period. Originating in the East, it was carried to Europe via the ports of the Holy Land on Italian ships.<sup>59</sup>

### Ammoniacum

Gum ammoniac, *Dorema ammoniacum* (Apiaceae), **A:** wushshaq, 'ushshaq<sup>60</sup>

**D&H:** Very large perennial herb (up to 3 m), with a stout stem, compound leaves and umbels of white flowers.<sup>61</sup> The name of the plant apparently derives from the temple of 'Jupiter Ammon' in the Libyan Desert where it was gathered. There are two forms of the resin of the ammoniacum plant known in trading: refined—a clean substance in the form of yellow drops that was a medicinal drug in England, and raw—a lumpish dark resin mixed with broken stems.<sup>62</sup>

**PU:** Ammoniacum features in 4 prescriptions (T-S Ar.42.60; T-S Ar.43.338; T-S NS 265.62; T-S NS 306.48).

**TU:** Ammoniacum is also mentioned in books in recipes for the treatment of eye diseases (T-S AS 157.355) one of which was copied, according to Isaacs, with some variation from 'Alī b. 'Īsā's *Tadhkirat al-Kaḥḥālīn* (ed. Hyderabad, p. 347; T-S NS 306.48r). It also appears as a simple in lists of *materia medica* (T-S AS 166.126; T-S Ar.40.157) and in a recipe for unknown uses (T-S AS 180.59).<sup>63</sup>

**OMU:** The physician Assaf writes that it serves to cure pains, various diseases, intestinal worms, and nail problems.<sup>64</sup> According to al-Kindī, the resin of the ammoniacum plant is a component in various medications, among them to treat putrescent wounds, eye diseases, and madness.<sup>65</sup> According to Maimonides, 'armoniac' is a strong purgative. The smell of the resin is akin to garlic and its taste is bitter and pungent. It

<sup>58</sup> Goitein, Society, I, pp. 153–155, 200; II, p. 78.

<sup>59</sup> Praver, Jerusalem, p. 402.

<sup>60</sup> Issa, p. 71, no. 18; Maimonides, Glossaire, no. 124.

<sup>61</sup> Chevallier, p. 200.

<sup>62</sup> Grieve, p. 31; Howes, pp. 314–315.

<sup>63</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>64</sup> Assaf, IV, 403–404.

<sup>65</sup> al-Kindī, nos. 80, 83, 86, 126, 136, 161, 172, 205.



was considered a hot and dry drug and was used extensively.<sup>66</sup> Ibn al-Bayṭār cites various physicians in connection with its medical uses; for instance, Ibn Sīnā notes that it is good for cooling the blood, draining liquid and phlegm, disinfecting, and treating growths.<sup>67</sup>

**TM:** Among Yemenite Jews there were many accepted uses of this plant, such as external treatment of headaches, mumps, eye infections and womb infections, and internal treatment of cough, internal bleeding, and infections of the liver, spleen, and kidneys. It also served to soothe, to treat worms, and to cure wounds. The resin of one of the ferula species served as a substitute for this substance.<sup>68</sup> In Iraq and Iran the resin of the plant served as a stimulating, expectorating and purgative drug, and was used for the treatment of asthma, growths, and glandular swellings.<sup>69</sup> The Jews of Iraq used it to remove bunions, to reduce swellings, and to treat constipation.<sup>70</sup> The resin was imported to Egypt from Morocco and Persia, and served as a purgative and an abortifacient;<sup>71</sup> it was used in other Middle Eastern countries for similar uses.<sup>72</sup>

**TAI:** 'Orpiment ammoniac' is listed in the Venice Laws (1233) among substances that could be traded and transported from Syria to Europe.<sup>73</sup>

## Anemone

*Anemone coronaria* (Ranunculaceae), **A:** shaqā'iq al-nu'mān<sup>74</sup>

**D&H:** Geophyte with a perennial bulb; its flowers are 3–5 cm in diameter attached to 10–40 cm stalk. Flowers vary in colour (usually red; white and purple found occasionally). Grows wild in open fields all over the Mediterranean phytogeographic zone. Some scholars identify it with the Kalanita mentioned in the Talmud (Bab. Talmud, Pessahim 35a). Dioscorides mentions the plant as used for the treatment of headache, eye diseases, leprosy, to clean ulcers, increase lactation, and stimulate menstruation.<sup>75</sup>

<sup>66</sup> Maimonides, Aphorisms, 13:3; 21:80.

<sup>67</sup> Ibn al-Bayṭār, al-Jami I, pp. 34–35; Leclerc, no. 83. Cf. Ibn Sina, p. 252.

<sup>68</sup> Reiani, no. 41. Cf. the uses in England and Europe in Grieve, p. 31.

<sup>69</sup> Hooper, p. 113.

<sup>70</sup> Ben-Yakov, pp. 211, 233, 253.

<sup>71</sup> Meyerhof, Bazaar, no. 486.

<sup>72</sup> Lev & Amar, Ethnic, p. 192.

<sup>73</sup> Venice Laws, p. 285; Praver, Colonial, p. 480.

<sup>74</sup> Issa, p. 17, no. 6, Maimonides, Glossaire, no. 359.

<sup>75</sup> Dioscorides, II.207.

**PU:** Anemone figures in a prescription for unknown uses (T-S AS 176.494).

**TU:** Anemone extracts are mentioned in books: in recipes for the treatment of eye diseases (eye drops), including hypertrophy and atrophy of the canthi (T-S Ar.41.24). Red anemone was one of the simples used for eye ulcer listed in 'Alī b. 'Īsā's *Tadhkirat al-kaḥḥālīn*, third discourse, chapter 27, according to Isaacs (T-S Ar.11.6). Another species, *Anemone hortensis*, appears in a recipe for skin diseases (lotion and poultices), mainly for the treatment of pustules and remove scabs (citing Galen; T-S Ar.42.22).<sup>76</sup>

**OMU:** al-Kindī writes that red anemone is used to treat scrofula and moist ulcer.<sup>77</sup> R. Nathan ben Yoel Falaquera (13th century) records the use of anemone for dyeing the hair black (with walnut shell) and treating cataract.<sup>78</sup>

**TM:** The plant is used in modern Egypt for the treatment of eye diseases (collyria) to cicatrize ulcers, and leprosy.<sup>79</sup>

## Apple

*Malus pumila* (= *Pyrus malus* = *Malus sylvestris*) (Rosaceae), **A:** **tuffāh**<sup>80</sup>

**D&H:** The apple is the most important fruit tree in the world today.<sup>81</sup> It is mentioned in ancient Egyptian sources, in the Bible, and in rabbinical literature. It was eaten fresh, dried, and grated and even wine was made from it.<sup>82</sup> The first apparent evidence for the use of the fruit for curative purposes can be found in the biblical verse: 'Stay me with flagons, comfort me with apples, for I am sick of love' (Song of Songs 2:5). Apple wine served to soothe the stomach (Bab. Talmud, Aboda Zara, 40b). Classical medical literature has descriptions of the use of apples as a remedy. Dioscorides, for example, describes *Melea* and its uses.<sup>83</sup>

<sup>76</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>77</sup> al-Kindi, pp. 293–294, no. 169, see also p. 236, no. 24.

<sup>78</sup> Amar & Buchman, p. 246.

<sup>79</sup> Ducros, pp. 76–77, no. 135.

<sup>80</sup> Dinsmore & Dalman, no. 674; Issa, p. 151, no. 17; Low, III, p. 212.

<sup>81</sup> Plants & Animals, XII, p. 107.

<sup>82</sup> Goor, Fruits, pp. 223–224, 231–234; Low, III, pp. 212–235; Feliks, World, pp. 60–63.

<sup>83</sup> Dioscorides, I.159; Goor, Fruits, p. 234.

**PU:** Apple figures in a list of *materia medica* (T-S AS 153.51) and in 2 prescriptions for unknown uses (T-S AS 152.34; T-S NS 194.70).

**TU:** Apple is also mentioned in books: in recipes for fevers, purgative, general tonic (T-S Ar.39.458; T-S Ar.43.320; T-S AS 183.183), and in some for unknown uses (T-S Ar.45.26; T-S AS 179.273; T-S Or.1080.1.87). It appears in medical books (T-S Ar.39.91; T-S Ar.40.1; T-S Ar.41.47; T-S Ar.41.78; T-S Ar.42.167; T-S Ar.44.201; T-S AS 179.247), on fevers (T-S Ar.40.155; T-S Ar.44.208; T-S NS 90.52), on poisons (T-S Ar.44.77; T-S AS 176.277), on sex (T-S Ar.44.121), *materia medica* (T-S Ar.41.29; 43.225; T-S Ar.44.60); in pharmacopoeias (T-S Ar.40.51; T-S Ar.40.91; T-S Ar.40.112; T-S Ar.41.123; T-S Ar.44.205; T-S Ar.45.33; T-S AS 179.110), quasi-medicine (T-S Ar.11.17; T-S Ar.40.149), and in other fragments (T-S Ar.38.76; T-S Ar.38.78).<sup>84</sup>

**OMU:** Medieval physicians advised the use of apples cooked in water or grated with various additions (such as mother's milk) as a remedy, particularly for eye diseases.<sup>85</sup> Ibn Sīnā and al-Bīrūnī recommend the use of the 'Shāmī' apple for curative purposes.<sup>86</sup> Maimonides counsels taking sour apple juice by those bitten by venomous creatures, against snake-bite, and after drinking poison. Apples were recommended for eating after a meal, and the smell of apples was renowned for strengthening the mind and body. The apple was considered a cold and dry drug.<sup>87</sup> Ibn al-Bayṭār describes the tree and its fruits, and mentions its medical uses: to cool and cure the stomach, to relieve intestinal pains, to increase milk production, and to cure scorpion stings.<sup>88</sup>

**TM:** The use of apples was widespread among the Jews of Iraq, who saw them as a medicine against depression and to treat eye diseases, constipation, and intoxication. Apples also served as a component in a medication against tuberculosis. Apple jam strengthened the body and its organs.<sup>89</sup> Tannin in the apple, with the addition of the potassium it contains, made it a medicine against urine acids by neutralizing other acids created by the albumin in food. Apples also served to cure arthritis, joint pains, herpes, and other illnesses.<sup>90</sup>

<sup>84</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>85</sup> Goor, Fruits, p. 234.

<sup>86</sup> Ibn Sīnā, p. 445; al-Bīrūnī, I, p. 91.

<sup>87</sup> Maimonides, Poisons, p. 132; Maimonides, Aphorisms, 20:52, 74; 21:73; 23:64; Maimonides, Regimen, III, 2.

<sup>88</sup> Ibn al-Bayṭār, al-Jamī, I, pp. 139–140; Leclerc no. 417. Cf. al-Antaki, p. 96.

<sup>89</sup> Ben-Yakov, pp. 114, 163, 182, 256, 397, 398, 351, 352, 361.

<sup>90</sup> Goor, Fruits, p. 2234. Content of substances and nutritional value in Plants & Animals, XII, pp. 107–108.

**TAI:** Apples did not grow in Egypt as they did in Palestine, Syria, and Iran. Evidence of export of apples from the Levant to Iraq and from Lebanon to Egypt is found in medieval literature.<sup>91</sup> The ‘apple man’ (*tuffāhī*) is thus mentioned in Jerusalem (T-S 28.199), and apple juice was sold at the market by juice-sellers (*sharābīs*).<sup>92</sup>

## Apricot

*Prunus armeniaca* (Rosaceae), **A:** **barqūq, mishmish**<sup>93</sup>

**D&H:** The origin of the apricot is probably China, where it was apparently domesticated in the 1st century BCE. It reached the Middle East through Armenia or Iran. Centuries later it became an accepted cultivated crop in Syria, Turkey, Greece, and Italy.<sup>94</sup> In the Middle Ages its cultivation was widespread in Europe as well, and today it grows in temperate regions throughout the world.<sup>95</sup> The apricot is not mentioned in the Bible or in rabbinical literature.<sup>96</sup> Apricot and plum are allied species, and it seems that during the Middle Ages there were many cross-breed varieties known by various names, which makes their distinction for identification difficult.<sup>97</sup>

**PU:** Apricot features in 3 prescriptions for unknown uses (T-S AS 182.179; T-S Or.1080.1.87; T-S NS 305.76).

**TU:** Apricot appears in books in recipes for fevers, and stomachache (T-S NS 90.47) and in lists of *materia medica* (T-S Ar.35.366r; T-S Ar.44.182). It also is found in medical books (T-S Ar.40.11) on ophthalmology (T-S Ar.41.24), on *materia medica* (T-S Ar.41.133; T-S Ar.43.132; T-S Ar.43.225; T-S Ar.44.60), in pharmacopoeias (T-S Ar.45.33), in quasi-medicine (T-S NS 222.41), and in other fragments (T-S Ar.38.67).<sup>98</sup>

**OMU:** al-Kindī describes the use of the apricot in a preparation for a transfusion.<sup>99</sup> Maimonides describes the use of the ‘kernel of roasted apricot’ to prepare a medication to stiffen the penis. Elsewhere he

<sup>91</sup> Amar, Agricultural, pp. 224–225.

<sup>92</sup> Goitein, Society, I, pp. 121, 151, IV, p. 232.

<sup>93</sup> Ibn al-Baytar, al-Jami I, p. 89; Leclerc, no. 274; Issa, p. 148, no. 17; Maimonides, Glossaire, no. 13, 233.

<sup>94</sup> Zohary & Hopf, p. 172.

<sup>95</sup> Plants & Animals, XII, p. 110.

<sup>96</sup> A summary of the history of the tree in the Land of Israel is given in Goor, Fruits, pp. 253–256; Amar, Production, pp. 218–219.

<sup>97</sup> Amar, Production, p. 218.

<sup>98</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>99</sup> al-Kindī, prescriptions nos. 211, 214.

notes the use of the ‘mishmish’ leaves to treat mouth sores, tonsils, and throat, and he warns that the fruit is considered a bad food and that one should eat something else before consuming it.<sup>100</sup> Dāwud al-Anṭākī lists medical uses such as against itching and stinging, thirst, burns, obstructions, stomach problems, skin diseases, pains, swellings, and intestinal worms. The apricot is a cold and moist drug and serves as a diuretic.<sup>101</sup>

**TM:** In Iraq, apricot fruit, especially the seed, was used as a base for a skin ointment.<sup>102</sup> The Jews of Iraq used the fruit to cure lung infection, and the seeds to treat haemorrhoids and fissures in the anus, to drain abscesses, and to cure wounds and ear infections.<sup>103</sup>

**TAI:** During the Mamluk and Ottoman periods the apricot was listed among the typical crops in the Levant.<sup>104</sup>

### Arar tree

*Callitris quadrivalvis* (Cupressaceae), **A: sandarūs**<sup>105</sup>

**D&H:** Small evergreen tree, with small, scale-like leaves and conical fruit. Grows wild in north-west Africa. Drops of white resin that flow from its trunk are used as incense and in medicine. Levey notes two more kinds of resin, with the same name, which are made out of *Thuya orientalis* or *T. articulata* known in Morocco.<sup>106</sup>

**PU:** Arar tree figures in 4 lists of *materia medica* (T-S Ar.39.487; T-S Ar.51.53; T-S AS 184.34; T-S NS 164.12).

**TU:** Arar tree also appears in books on *materia medica* (T-S Ar.11.25).<sup>107</sup>

**OMU:** The Arabs in India used it to treat diarrhoea and haemorrhage. al-Kindī writes that the arar-tree was used to treat erysipelas.<sup>108</sup> R. Nathan ben Yoel Falaquera recommends using the smoke of arar-tree resin

<sup>100</sup> Maimonides, Sexual, 13:1; Maimonides, Aphorisms, 9:123; 20:61; 21:79; Maimonides, Regimen, 1:13.

<sup>101</sup> al-Antaki, p. 299. Cf. Ibn al-Baytar, al-Jami, IV, pp. 157–158; Leclerc, no. 2136; Ibn Sina, p. 372; al-Biruni, I, p. 306.

<sup>102</sup> al-Rawi & Chaakravarty, pp. 77–78, with contents of active substances. Cf. Grieve, p. 51.

<sup>103</sup> Ben-Yakov, pp. 121, 127, 225, 241, 265, 341.

<sup>104</sup> For example: al-Qalqashandi, p. 87; Suriano, pp. 40, 223; al-Badri, p. 113; Mantran & Sauvaget, p. 40.

<sup>105</sup> Issa, p. 37, no. 1.

<sup>106</sup> al-Kindi, p. 287, no. 156.

<sup>107</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>108</sup> al-Kindi, p. 287, no. 156.

for the treatment of cold, runny nose, toothache, haemorrhoids, and bleeding.<sup>109</sup>

**TM:** In modern Egypt and Morocco the arar-tree resin is used as incense and as remedy for diarrhoea.<sup>110</sup>

**TAI:** From a letter sent from Alexandria to a merchant in Fustat (about 1065) we learn that there was a demand for Arar-tree resin, and it was not to be found in the markets.<sup>111</sup>

### Asafoetida

Asafetida, at the *Ferula assa-foetida* (Apiaceae), **A:** **hiltit**, **'anjudān**, **'anjudhān**<sup>112</sup>

**D&H:** Perennial plant (2 m), with fleshy taproot, hollow stem, compound leaves and many white flowers in umbels.<sup>113</sup> In rabbinical writings 'hiltit' is mentioned several times (Mishna, Shabbat, 2, 3; Jer. Talmud, Shev'it, 87c), and Feliks identifies it with asafetida resin (a ferula species).<sup>114</sup> It is also noted that 'the hiltit itself is a healthy food' (Jer. Talmud, Shabbat, 20:3).

**PU:** Asafoetida appears in a prescription for unknown uses (T-S Ar.40.53).

**TU:** Asafoetida is mentioned also in books: in recipes for the treatment of colic [aperients and lincti; T-S Ar.43.142) and as a simple in lexica of *materia medica* (T-S AS 160.197; T-S Ar.41.37), and in recipes for unknown uses, one in the form of chewing gum (made of different resins; T-S Ar.42.20).<sup>115</sup>

**OMU:** Maimonides notes that the asafoetida is a hot and dry drug, serving as a purgative, a medication, and a component in an ointment for a dressing on an area that has been bitten.<sup>116</sup> The leaf and root of the plant served as substances that gave bad breath and repelled another person.<sup>117</sup>

<sup>109</sup> Amar & Buchman, p. 217.

<sup>110</sup> al-Kindi, p. 287, no. 156.

<sup>111</sup> Gil, Kingdom, IV, p. 586, no. 794.

<sup>112</sup> Issa, p. 82, no. 8; Maimonides, Glossaire, no. 18, 31, 223.

<sup>113</sup> Chevallier, p. 208.

<sup>114</sup> Feliks, Yerushalmi, II, 134.

<sup>115</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>116</sup> Maimonides, Aphorisms, 13:3; 21:80; Maimonides, Poisons, pp. 101, 103, 127.

<sup>117</sup> Maimonides, Sexual, 7:1; Maimonides, Aphorisms, 9:88; 15:33.

**TM:** Israeli Arabs and the Jews of Yemen, Iraq, and North Africa used ‘hiltīt’ to cure wounds, to treat rash, swellings, toothache, throat and stomach pains, to flush haemorrhoids, to strengthen the eyesight, and to improve the voice. The substance also served to increase urination and to treat stomachache in infants.<sup>118</sup> Asafoetida, which is exported from Iran or Afghanistan, serves as a purgative, helps digestion, and is also used to treat cough and asthma.<sup>119</sup>

**TAI:** al-Bīrūnī notes the medical uses of the resin, and the toxicity of the resin of the ferula that grows in Morocco and Greater Syria.<sup>120</sup> Asafoetida was traded by the Jews in the medieval Mediterranean area (Alexandria, Cairo, Qayrawān, and Palermo) according to some Genizah fragments, mainly of the 11th century.<sup>121</sup>

### Ash tree

*Fraxinus* sp. (*excelsior*, *syriaca*) (Oleaceae),<sup>122</sup> **A:** *dardār*, *lisān al-‘aṣāfir*, *lisān al-‘uṣfūr*<sup>123</sup>

**D&H:** Deciduous tree (up to 40 m), with pale grey bark, black conical leaf buds, and bright green leaves consisting of 7–13 oval leaflets.<sup>124</sup> The name ‘dardār’ was given to elm and common ash trees, but in the Levant this was the usual term only for the Syrian ash.<sup>125</sup> Various species of ash that grow in temperate forests were known mainly for their wood, which was easy to work; Pliny compared its quality to that of the oak. According to Dioscorides, the *Melia* (a species of ash) was a well known tree whose wood was used to dress bites and stings and to treat leprosy. In his view it was liable to be toxic.<sup>126</sup> According to Galen, it served for the treatment of open wounds.

<sup>118</sup> Reiani, no. 46. Compare al-Kindi, p. 260; Ben-Yakov, pp. 356, 434, 450, 496, 498.

<sup>119</sup> Hill, p. 173; Uphof, p. 222.

<sup>120</sup> al-Biruni, II, pp. 88–89.

<sup>121</sup> Ben-Sasson, pp. 238–239, no. 508; Gil, Kingdom, IV, p. 62, nos. 322, 653, 820, and see Indices.

<sup>122</sup> Issa, p. 84, no. 20, Maimonides, Glossaire 91, 212.

<sup>123</sup> Maimonides, Glossaire, no. 91; Leclerc, no. 383. Similar identification in Issa, p. 185, no. 4.

<sup>124</sup> Chevallier, p. 211.

<sup>125</sup> Amar, Ibn al-Baytar, p. 67, n. 51; al-Ghāfiqī, pp. 386–488; Dinsmore & Dalman, no. 1127; Maimonides, Glossaire, no. 212; Issa, p. 84, no. 20; al-Biruni, I, p. 157.

<sup>126</sup> Dioscorides, I.108.

**PU:** Ash tree figures in 2 lists of *materia medica* (T-S Ar.30.274; T-S Ar.34.341) and in a prescription for the treatment of eye complaints (T-S NS 218.21).

**TU:** Ash tree fruits and seeds are mentioned in books: in recipes for palpitation, theriac, and a purgative (T-S Ar.42.199). Also in medical books (T-S Ar.40.1) on sex (T-S Ar.41.75), and it is described as beneficial for erection and as an aphrodisiac (with hyacinth; T-S AS 180.210).<sup>127</sup>

**OMU:** According to Maimonides, ash was a component in a medication called the 'great 'iṭriful'; it was considered as a hot and moist drug.<sup>128</sup> Dāwud al-Anṭākī notes that 'dardār' was a hot and dry drug that served to dispel gases, to relieve pains of the stomach, ribs, womb, and back, to ease urination and to improve the memory; it was also an aid to pregnancy.<sup>129</sup>

**TM:** From an allied species (*Fraxinus ornus*) that originates in Asia Minor and grows today in Sicily a self-secreting substance is produced, called *Manna*. It is secreted by tapping on the tree trunk, and is used as a purgative for children.<sup>130</sup> In Iraq, this species is used as a purgative, a strengthener, and a stimulant.<sup>131</sup>

## Asparagus

*Asparagus officinalis* (Alliaceae), **A: hilyawn**<sup>132</sup>

**D&H:** Slender stemmed perennial (2 m), with long fronds of delicate needle-like leaves and bell-shaped yellow-greenish flowers that produce small bright red berries.<sup>133</sup> According to the Jewish sages, the asparagus was a plant 'beneficial' for the heart and 'good' for the eyes and the stomach (Bab. Talmud, Berakhot, 51a; Mishna, Nedarim, 6:10).<sup>134</sup> The plant grows mainly in Europe along river banks. In ancient Greece it

<sup>127</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>128</sup> Maimonides, Regimen, 3:11; Maimonides, Aphorisms, 21:77.

<sup>129</sup> al-Antaki, p. 282. Cf. Ibn al-Baytar, al-Jami, IV, pp. 108–109; Leclerc, no. 861. Cf. Ibn Sina, p. 293.

<sup>130</sup> Chopra et al., p. 80; Uphof, p. 233, with content of active substances.

<sup>131</sup> al-Rawi & Chaakravarty, p. 45, with content of active substances. On its use in Europe and England see Grieve, pp. 67–69.

<sup>132</sup> Additional names: Maimonides, Glossaire, no. 111; al-Biruni, I, 329; Eshtori, p. 664; Maimonides, Regimen, p. 122; Dinsmore & Dalman, nos. 1668–1670; Issa, p. 24, no. 4.

<sup>133</sup> Chevallier, p. 172.

<sup>134</sup> In the view of researchers this is not the asparagus known today but some kind of cabbage. See Amar, Production, p. 47.



was an edible wild plant, and in Rome a cultivated crop.<sup>135</sup> Dioscorides describes *Aspharagos*, which grew on rocks and was used as food. Listed among its medical uses are treating problems of the urinary tract and the kidneys, dysentery, and toothache.<sup>136</sup>

**PU:** Asparagus seeds feature in a prescription for unknown uses (T-S AS 173.3).

**TU:** Asparagus is mentioned in books: in recipes (for unknown uses; T-S Ar.39.184), in medical books (T-S Ar.39.161; T-S Ar.40.1; T-S Ar.40.68; T-S Ar.41.66; T-S Ar.42.167), in pharmacopoeias (T-S AS 144.104), and quasi-medical fragments (T-S Ar.11.17).<sup>137</sup>

**OMU:** According to Ibn Waḥshiyya, asparagus serves to sharpen the eyesight, to improve the clarity of the eye, and to stop excessive tears.<sup>138</sup> Dāwud al-Anṭākī attests that the seed were used ‘together with poached eggs for fattening’.<sup>139</sup> Maimonides reports on the use of the asparagus root in a light medical potion that strengthens and cures, as well as a medicine for spider bite, for heating, and to induce urine. The seed of the plant is used as a component in a general strengthening medication (mainly for the brain and heart), delays whitening of the hair, strengthens the senses, aids coitus and the ‘fermentation of the seeds, which is very helpful for intercourse, it increases the sperm, strengthens the kidneys and fattens’.<sup>140</sup> Elsewhere Maimonides cites Ibn Ruṣhd to the effect that asparagus is a medicine for ‘pains in the kidneys, for weakness, and for toothache’.<sup>141</sup> al-Ghāfiqī cites numerous physicians who describe the use of the plant for food and for medicine. Listed among the uses are cleansing the liver and kidneys, and relieving toothache and backache. Asparagus is considered a diuretic, sexually arousing, and serving for heating.<sup>142</sup> al-Qazwīnī cites Ibn Sinā as claiming that the plant is effective for backache, toothache, and pains in the thigh sinews, for infections in the large intestines, for blockages in the urinary tract, for fertility problems, for improving sexual performance and to stimulate menstruation.

<sup>135</sup> Plants & Animals, XII, p. 82.

<sup>136</sup> Dioscorides, II.152.

<sup>137</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>138</sup> Ibn Waḥshiyya, I, p. 538.

<sup>139</sup> al-Anṭākī, p. 335. Cf. Ibn al-Baytar, al-Jami, IV, pp. 195–196; Leclerc, no. 2260; Tal, p. 96.

<sup>140</sup> Maimonides, Regimen, 2:10; 3:11; Maimonides, Aphorisms, 21:65, 68; Maimonides, Sexual, p. 24; Maimonides, Poisons, p. 121.

<sup>141</sup> Maimonides, Regimen, p. 90.

<sup>142</sup> al-Ghāfiqī, no. 262.

He claims to have heard that excessive drinking of the plant juice causes diarrhoea.<sup>143</sup>

**TM:** In Iraq asparagus is used as a diuretic to drain liquids and to relieve toothache.<sup>144</sup> Among the Jews of Iraq the plant was generally used to improve the quality of the sperm.<sup>145</sup>

**TAI:** al-Muqaddasī lists the plant among the widespread crops in the district of Filasṭīn.<sup>146</sup> Dāwud al-Antākī states that it is exported from the Levant to nearby areas.<sup>147</sup> Asparagus was one of the kinds of food eaten on the Sabbath by the Jews of medieval Cairo, and a certain type of it supplied the material for the production of a common drink.<sup>148</sup>

## Asphalt

Pitch, Bitumen, Tar, Pix, **A: zift, zīft, qafr al-yahūd, qīr**<sup>149</sup>

**D&H:** A resinous mineral, solid or semi-solid, which consists of a mixture of hydrocarbon created naturally, probably due to a solidification or oxidizing process. Asphalt sometimes erupts from the earth along the shores of the Dead Sea, from springs in the Judean Desert, and all along the Mediterranean coast. Asphalt was extensively used by several cultures in the ancient world. It was an important and expensive commodity and was used in agriculture, industry, and medicine.<sup>150</sup> The main ancient use of asphalt was as the key material in the mummification process, which was prevalent in ancient Egypt. Mummification was considered part of medicine, and was performed by highly trained physicians. It began to be practised in Egypt during the Iron Age and continued well into the Byzantine period.<sup>151</sup> Asphalt is mentioned in the Bible several times and with different names: 'kufer' in the Noah's Ark story, 'himar' and 'zefet' in the story of the infant Moses and his

<sup>143</sup> al-Qazwīnī, pp. 263–264. Cf. al-Badri, pp. 165–166.

<sup>144</sup> Contents of substances and additional uses of like species in Hooper, pp. 88–89; al-Rawi & Chaakravarty, p. 16. Cf. uses in Europe in Grieve, pp. 71–72; Uphof, p. 55.

<sup>145</sup> Ben-Yakov, p. 148.

<sup>146</sup> al-Muqaddasī, p. 181.

<sup>147</sup> al-Antakī, p. 335. Cf. Ibn al-Baytar, al-Jamī, IV, pp. 195–196; Leclerc, no. 2260; Tal, p. 96.

<sup>148</sup> Goitein, Society, IV, pp. 232, 261.

<sup>149</sup> Maimonides, Glossaire, no. 138; al-Kindi, pp. 319–320, no. 243.

<sup>150</sup> HE, V, pp. 49–50; Mazor, pp. 363–364; Kaplan, Asphalt; Kaplan, Bitumen; Nissenbaum, Utilization; Nissenbaum, Dead Sea; Nissenbaum, Asphalt.

<sup>151</sup> Connan et al.

‘ark’, and ‘zefet’ in the destruction of Sodom and Gomorrah, as well as in the prophetic books.<sup>152</sup> Asphalt was also used for building in Mesopotamia.<sup>153</sup> Classical sources mention asphalt and the way it was commercially collected. Josephus Flavius writes that asphalt cures the body and it is mixed in many preparations.<sup>154</sup> The Jewish Sages mention ‘kofra’ and ‘zefet’ in connection with various uses.<sup>155</sup>

**PU:** Pitch features in 2 lists of *materia medica* (T-S Ar.34.341; T-S Ar.35.82) and in 2 prescriptions, one for unknown uses (T-S AS 117.4), and one for plasters (T-S NS 222.34).

**TU:** Pitch is mentioned in general medical books (T-S Ar.43.117) and in others on toxicology (T-S Ar.41.116), *materia medica* (T-S Ar.44.218) and dentistry (T-S AS 177.338), and in pharmacopoeias (T-S Ar.11.31; T-S AS 178.24; T-S NS 306.30).<sup>156</sup>

**OMU:** Asphalt was one of the important constituents of medieval theriac,<sup>157</sup> an ointment to treat cattle skin diseases and to protect medicinal substances from pests.<sup>158</sup> According to al-Kindī, ‘qir’ was an important component in some remedies for the treatment of haemorrhoids, wounds, and swollen lips.<sup>159</sup> Maimonides asserts that ‘zefet’ was a key component in a dressing for the treatment of ‘pains in the nerve’.<sup>160</sup> According to his writings, asphalt was one of the components of theriac.<sup>161</sup> al-Qazwīnī suggests that ‘zif’ was used to treat symptoms and conditions such as skin diseases, arthritis, cough, muscle pains, etc.<sup>162</sup>

**TAI:** Several Genizah fragments deal with trade in sea asphalt between Cairo, Alexandria, Qayrawān, and Mahdiyya.<sup>163</sup> Pitch was an important article in commerce, especially at the 11th century; one of the most

<sup>152</sup> Summary in Kaplan, Bitumen, pp. 81–82.

<sup>153</sup> Summary of sources in Kaplan, Asphalt, pp. 230–234. Cf. Nissenbaum, Utilization.

<sup>154</sup> Josephus, JW, IV:8:3.

<sup>155</sup> Summary in Kaplan, Bitumen, pp. 81–82.

<sup>156</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>157</sup> In connection with this see Berman, Theriac.

<sup>158</sup> Amar, Substances, p. 54.

<sup>159</sup> al-Kindī, nos. 76, 122. Cf. Ibn Sina, p. 306; al-Biruni.

<sup>160</sup> Maimonides, Aphorisms, 9:115. Regarding its medical properties, see *ibid.*, 21:75, 88.

<sup>161</sup> Maimonides, Sexual, pp. 105–107.

<sup>162</sup> al-Qazwīnī, p. 214. Cf. Ibn al-Baytar, al-Jami, IV, pp. 26–27; Leclerc, no. 1818; al-Antaki, p. 261.

<sup>163</sup> Gil, Kingdom, II, p. 710, no. 241, p. 894, no. 295, III, p. 706, no. 512, IV, p. 932 see 10 more fragments in Indices. Gil, II, p. 301, no. 176. Ben-Sasson, p. 81, no. 12, p. 384, no. 84.

important merchants was Nahray b. Nissim of Fustat (Old Cairo).<sup>164</sup> Israel b. Nathan of Jerusalem asked Naharai to send him asphalt from Alexandria 'since it is impossible to find it in Jerusalem' (T-S Or.1080 J78). In another letter Israel explains that he needs the material to cure himself, particularly his eyes (T-S 12.364; T-S 13J26.4; T-S 10J10.24).<sup>165</sup> al-Tamīmī describes the use of asphalt from the Dead Sea as a component in theriac.<sup>166</sup> Ibn al-Bayṭār writes in his entry 'qafr' that this is 'qafr al-yahūd' mentioned by al-Tamīmī in his *Murshid*. Ibn al-Bayṭār adds that its origin is from 'The sea of Judea, which is the Dead Sea in Palestine, near Jerusalem and in the "Ghawr" not far away from Jericho'.<sup>167</sup> Similar descriptions are given in the entry 'qafr al-yahūd'. During the Crusader period, 'kafar' of the Dead Sea was used medicinally and may have also been exported.<sup>168</sup> According to the wide range of historical sources, it seems that different kinds of asphalt of many diverse origins were traded in the Levant under various names. Though Israel, particularly the Dead Sea area, was the central source for asphalt production in the ancient world, the letter from the Genizah<sup>169</sup> which tells of the appeal made in Jerusalem to obtain asphalt from Egypt might suggest that even though the writer lived near the main sources of asphalt, he need a special kind of the substance, which was collected on the sea shores of Egypt, for medicinal treatment.

## Asphodel

*Asphodelus aestivus* (= *ramosus*) (Asphodelaceae), **A:** **khunthā, barawq, 'asrās, 'ashrās**<sup>170</sup>

**D&H:** Tall perennial (1.5 m), with long lance-shaped leaves (50 cm), tall flowering stems, white flowers, and fleshy globular roots.<sup>171</sup> According to some commentators among the Sages, 'irit' is asphodel which served as fodder for domestic animals (Tosefta, Shevi'it, 5:17). But since the leaves of the plant are edible only after they are dried, researchers are

<sup>164</sup> Goitein, Society, I, p. 154.

<sup>165</sup> Gil, p. 163, no. 479; p. 165, no. 480; p. 175, no. 482.

<sup>166</sup> al-Tamimi, pp. 29–30.

<sup>167</sup> Ibn al-Baytar, al-Jami, IV, p. 75; Leclerc, no. 1956. On 'hemar' see *ibid.*, no. 705.

<sup>168</sup> Prawer, Colonial, p. 471.

<sup>169</sup> Gil, p. 163, no. 479; p. 165, no. 480; p. 169, no. 481, p. 175, no. 482.

<sup>170</sup> Maimonides, Glossaire, no. 395; Dinsmore & Dalman, no. 1673; Issa, p. 24, no. 10.

<sup>171</sup> Plants & Animals, XI, p. 197.

in doubt about their precise identification.<sup>172</sup> Dioscorides recommends *Asphodelos* to cure ulcers, infections, tuberculosis, ear infections, and toothache, and also claims it is a purgative. According to him and to Galen, the roots are a diuretic and regulate menstruation.<sup>173</sup>

**PU:** Asphodel figures in 2 lists of *materia medica* (T-S Ar.39.450; T-S AS 182.222) and a prescription (T-S Ar.42.152).

**TU:** Asphodel is also mentioned also in a lexicon of *materia medica* (T-S Ar.41.133).<sup>174</sup>

**OMU:** al-Kindī describes the use of the plant for a preparation to cure infected wounds.<sup>175</sup> Maimonides notes that it is a cold and dry drug.<sup>176</sup> Ibn al-Bayṭār states that it was used to bandage wounds and fractures, and that ‘it was very beneficial for this purpose.’<sup>177</sup> Dāwud al-Anṭākī describes a variety of medical uses: draining pus, soothing pains of the chest, spleen, and liver, treating respiration, and relieving pains of the joints, back, head, and ears. The plant also served as a component in preparations to increase virility.<sup>178</sup>

**TM:** The Arabs of Israel make extensive medical use of the common asphodel, mainly its roots, for example, to cure jaundice, headaches and backaches, eczema and bunions, to treat swollen legs and cracked skin, and for internal use in reducing gases.<sup>179</sup> The roots of the asphodel are also used as a medicine for eye burns and pains of the back, legs, and gums.<sup>180</sup> The Jews of Tunisia cooked the roots in olive oil and used the liquid to treat ear secretions and toothache. A dough prepared from the dried roots was used to wrap sore breasts.<sup>181</sup> In Europe the common asphodel is known as a medicinal plant and has similar uses.<sup>182</sup> Pharmacological research conducted in Egypt in the present day found that the roots contained various glycosides known for their spasmogenic activity.<sup>183</sup>

<sup>172</sup> Ibid., identification: Low, II, pp. 152–156.

<sup>173</sup> Dioscorides, II.199.

<sup>174</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>175</sup> al-Kindi, no. 24.

<sup>176</sup> Maimonides, Aphorisms, 21:83. Concerning identification, see n. 409.

<sup>177</sup> Ibn al-Baytar, al-Jami, I, 38; Leclerc, no. 88. Cf. Ibn al-Baytar, al-Jami, II, pp. 78–79; Leclerc, no. 826.

<sup>178</sup> al-Antaki, pp. 76–77.

<sup>179</sup> Palevitch et al., p. 121.

<sup>180</sup> Dafni, Edible, p. 95; Dafni, Bedouins, p. 238.

<sup>181</sup> Krispil, p. 905.

<sup>182</sup> Grieve, p. 72.

<sup>183</sup> Hammouda et al., p. 194.

**Azerolier**

*Crataegus* sp. (Rosaceae), **A:** za'rūr<sup>184</sup>

**D&H:** The main species are thorny azerolier (*Crataegus aronia*) and red azerolier (*Crataegus azarolus*).<sup>185</sup> The azerolier is mentioned in the Mishna (Demai, 1:1; Ma'aserot, 1:3) and in the Talmud (Bab. Talmud, Berakhot, 40b).<sup>186</sup> Dioscorides described *Mespilon*, which is identified with red azerolier. The tree and its edible fruits served as an astringent drug beneficial for the stomach and intestines.<sup>187</sup>

**PU:** Azerolier features in a list of *materia medica* (T-S NS 321.49).

**TU:** Azerolier is also mentioned in lexica of *materia medica* (T-S Ar.44.204; T-S Ar.44.218) and in a pharmacopoeia (T-S Ar.41.123).<sup>188</sup>

**OMU:** According to Maimonides, it was a cold and dry drug, and it was used extensively. Elsewhere he intimates that the fruit of azerolier, like other fruits, is not good for the health.<sup>189</sup> Ibn al-Bayṭār describes the tree and cites various physicians. Among the uses he lists are to treat intestinal problems and as an astringent and diuretic drug.<sup>190</sup>

**TM:** Many species of azerolier are used around the world for food, for the wood industry, and for curative purposes.<sup>191</sup> In Iraq, azerolier fruit serves as a soothing drug, and its seeds improve virility.<sup>192</sup>

**TAI:** In a list of customs rates imposed on foods, spices, and medicines in Acre during the 13th century, azerolier is mentioned under the name *zarours*.<sup>193</sup> It is listed with the produce of Greater Syria during the Mamluk period.<sup>194</sup>

<sup>184</sup> Maimonides, Glossaire, no. 132; Dinsmore & Dalman, no. 677; Issa, p. 59, nos. 5–7; Leclerc, nos. 1009, 1290, 1614, 2232.

<sup>185</sup> Feinbrun-Dothan, p. 287.

<sup>186</sup> Feliks, Fruit Trees, pp. 223–225. Amar, Production, p. 228, n. 4.

<sup>187</sup> Dioscorides, I.169.

<sup>188</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>189</sup> Maimonides, Aphorisms, 21:73.

<sup>190</sup> Ibn al-Bayṭār, al-Jami, II, pp. 162–163; Leclerc, no. 1112. Cf. Ibn Sina, p. 308; al-Antaki, p. 179; al-Biruni, I, 168.

<sup>191</sup> Uphof, p. 157; Dafni, Edible, p. 94; Grieve, pp. 385–386.

<sup>192</sup> Hooper, p. 107.

<sup>193</sup> Beugnot, II, 181, no. 37.

<sup>194</sup> al-'Umari (Sayyid ed.), p. 25; al-Qalqashandi, p. 87.

## Balm

Lemon balm, *Melissa officinalis* (Lamiaceae), **A: bād̄harnabūyah, bād̄ir nabīh**<sup>195</sup>

**D&H:** A perennial (up to 1.5 m), with tiny white flowers and deeply veined toothed leaves.<sup>196</sup> The name of the genus is derived from the Greek (honey) because it is a honey plant. By virtue of its ethereal oils in its leaves, the plant has served since early times as a medicinal and condiment plant. It seems that the plant was introduced into Europe and Britain by the Romans.<sup>197</sup> Classical physicians knew the *Melissophullon* and used it, among other things, to stop haemorrhages (Pliny), and to treat the sting of scorpion, the bite of a rabid dog, and stomach pains (Dioscorides).<sup>198</sup>

**PU:** Balm figures in a list of *materia medica* (T-S NS 164.12) and in a prescription (T-S AS 155.365).

**TU:** Balm is also mentioned in medical books on *materia medica* (T-S Ar.39.369, T-S Ar.42.73; T-S Ar.44.133), in pharmacopoeias (T-S AS 170.136, T-S Or.1080.3.39), in books on sexual medicine (T-S Ar.44.121; T-S Ar.44.149), and in general medical books (T-S Ar.44.201).<sup>199</sup>

**OMU:** The physician Assaf states that the scent of balm leaves is like that of the citron, and the plant is effective in treating snakebite, abscesses in the neck, cough, respiratory difficulties, and lung diseases.<sup>200</sup> Maimonides describes the use of balm seed as a component in a drink that ‘cheers the heart’. The leaves served as a base for medication against the ‘royal disease’—black bile that leads to mania. The leaves were used to prepare a medication against the sting of scorpions and spiders. In another book there is mention of the use of the seed in a concoction beneficial for coitus and to perfume the breath. It was considered a hot and dry drug.<sup>201</sup> Ibn al-Bayṭar cites various physicians who list medical

<sup>195</sup> Maimonides, Glossaire, no. 40; Issa, p. 117, no. 4; Dinsmore & Dalman, no. 1360; al-Biruni, I, 90. Discussion of identity in Amar, Production, p. 214; Leclerc nos. 324, 326, 414, 592, 2082.

<sup>196</sup> Chevallier, p. 111.

<sup>197</sup> Loewenfeld & Back, p. 159.

<sup>198</sup> Dioscorides, III.118.

<sup>199</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>200</sup> Assaph, IV, 411.

<sup>201</sup> Maimonides, Aphorisms, 21:69; Maimonides, Answers, 8:4, 19; Maimonides, Poisons, pp. 118, 121; Maimonides, Sexual, Introduction no. 3.

uses such as strengthening the heart, eliminating phlegm, aiding digestion, reducing gases, and as a mild purgative.<sup>202</sup>

**TM:** The leaves contain 0.1%–0.2% ethereal oil in which the main constituent is Citral. This oil has anti-bacterial properties. Various types of the plant were cultivated and they serve as condiment leaves and also produce scented oil (Oil of Balm) that is used in the beverage, cosmetics, and pharmacological industries. Traditional medicine makes use of the plant to strengthen the heart, to dispel melancholy, to reinforce the memory, to cleanse the womb, to increase sweating, to reduce heat, to soothe, to lessen gases, to relieve toothache, and to treat epilepsy, infertility, fear of heights, intestinal pains, noise in the ears, headaches, infertility, old age, the stings of poisonous creatures, nausea, and vomiting.<sup>203</sup> The Jews of Tunisia and Morocco used the leaves of the plant to prepare a stimulating and soothing tea, and the alcohol derived from them served as medication for the gall bladder and the scarring of wounds.<sup>204</sup> In Iraq the plant serves as a carminative and a stimulant, induces sweat and was a component in the cosmetics industry.<sup>205</sup>

**TAI:** During the Mamluk period the plant was listed among the perfume plants of the al-Shām region.<sup>206</sup>

### Balsam of Mecca

Balm of Gilead, *Commiphora gileadensis* (= *opobalsamum*) (Burseraceae), **A:** **balasān**<sup>207</sup>

**D&H:** Balsam is a small tree (up to 3 m), which grows in the desert areas of Arabia. It has horizontal and entangled branches, its bark is brown, the leaves small and shiny with tiny berries. Resin gum is obtained by from a gash cut in the trunk and it is brownish red in colour.<sup>208</sup> The use of balsam resin was common in the ancient Levant and all over the East. This resin is identified with the biblical 'tsori' (balm) or 'bosem' (scent)

<sup>202</sup> Ibn al-Baytar, al-Jami, I, pp. 74–75; Leclerc, no. 221. Cf. al-Antaki, p. 66; Ibn Sina, p. 272; al-Biruni, I, p. 69; al-Ghāfiqī, no. 145.

<sup>203</sup> Grieve, pp. 76–77; Loewenfeld & Back, p. 161; Plants & Animals, XI, p. 77; XII, p. 89; Uphof, p. 340; Tal, pp. 157–158.

<sup>204</sup> Krispil, p. 672.

<sup>205</sup> al-Rawi & Chaakravarty, p. 65, with content of substances.

<sup>206</sup> al-'Umari (Sayyid ed.), p. 26.

<sup>207</sup> Maimonides, Glossaire, p. 92, no. 324. Updated list of Arabic names in Issa, p. 55, no. 7.

<sup>208</sup> Description in Uphof, p. 146; Feliks, World, pp. 256–258; Grieve, p. 78.



as mentioned in the Song of Songs (5:1, 13; 6:2)<sup>209</sup> and it was also called ‘shemen ha-mishḥa’ (anointing oil). Until King Solomon’s reign, balsam resin was apparently imported to the Levant from Africa and Arabia. Thereafter it was cultivated in the gardens of Jericho and Ein Gedi.<sup>210</sup> This fact is recorded by Josephus Flavius; according to his contemporary sources of the Second Temple period, balsam trees were brought to the Holy Land by the Queen of Sheba.<sup>211</sup> Balsam resin is often mentioned in historical sources of the Second Temple period, in Jewish as well as in Roman and Hellenistic literature.<sup>212</sup> The Jewish Sages were proud of the balsam production in the Land of Israel and they composed a special blessing for ‘tsori gil’ad’ (Balm of Gilead) and the ointment made out of it. Pliny reports that balsam is the ‘most excellent of all perfumes, and nature had granted it to one country among all others, the land of Judea...’ He describes its medicinal uses and the various ointments made from it, and even mentions twenty prescriptions.<sup>213</sup> Dioscorides states that ‘balsamon’—the scented balsam resin—is a drug used against poisons and toxins. It is inflammable, and was used to thicken liquid medicines and also for the treatment of epilepsy, weakness, and dizziness.<sup>214</sup>

**PU:** Balsam seeds figure in a list of *materia medica* (T-S Ar.34.341). Balsam wood is mentioned twice in a prescription named *maʿjūn ḥibat Allāh* (T-S Ar.34.305).

**TU:** Balsam features also in books: in recipes for eye disease [collyria and kohl], epilepsy, palpitation, theriac, purgative, stomach ailments (T-S Ar.42.199; T-S Ar.43.80; T-S Ar.45.28; T-S NS 90.28; T-S AS 179.302). It likewise appears in general medical books (T-S Ar.11.31; T-S Ar.40.5; T-S Ar.40.162; T-S Ar.43.265; T-S Ar.44.80), in books on ophthalmology, (T-S Ar.41.40; T-S Ar.43.166; T-S AS 179.59), palpitation (T-S Ar.43.148; T-S Ar.43.149), *materia medica* (T-S Ar.40.133; T-S Ar.43.191; T-S AS 163.9); in pharmacopoeias (T-S Ar.41.90; T-S NS 306.29; T-S Or.1081.1.6) and other fragments (T-S Ar.43.145; T-S AS 180.283).<sup>215</sup>

<sup>209</sup> Feliks, *World*, pp. 248, 256–258.

<sup>210</sup> Amar, *Jordan*.

<sup>211</sup> Josephus, *JA*, VIII, 6: 6.

<sup>212</sup> For example, Low, I, pp. 299–304; Feliks, *World*, pp. 256–258; Felix, *Afarsemon*.

<sup>213</sup> Pliny, *XII*.54.

<sup>214</sup> Dioscorides, I.18. For a full review of balsam in the classical, Jewish, and Muslim literature as well as the archaeological findings, see Amar, *Incense*, pp. 58–73.

<sup>215</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

**OMU:** The physician Assaf reports on the use of ‘balsamo’ oil to treat diseases of many internal organs such as spleen, kidneys, liver, womb, and lungs, and also to treat cough, tuberculosis, obstructions in the urinary tract, skin diseases, bites, and stings.<sup>216</sup> According to al-Kindī, ‘balasān’ is a component in clysters.<sup>217</sup> Even in Europe during the Middle Ages, balsam oil was an important component in medicines. Shabbetai Donolo cites Pliny describing in great detail the concoction of ointments from balsam oil.<sup>218</sup> Maimonides notes that balsam bark is a component in ‘the great ’iṭrīful’, a medication for strengthening various organs, especially the heart and the senses, for delaying aging, and helping in coitus.<sup>219</sup> Elsewhere, mention is made of a plant used in a medication against ‘evil vapors of the stomach’. Balsam was an important component in this medication, and balsam oil was also used to counteract poison.<sup>220</sup> In describing the preparation of medication against poisoning, it is explicitly stated that balsam oil, contrary to the other components, was extremely hard to obtain because it was available only in Egypt.<sup>221</sup> Ibn Rushd reports that ‘the “balasān” is “afarsemon” ... the oil has many excellent qualities and its effects are marvellous’; among its uses are pain relief, dissolving stones in the urinary tract, curing infertility, and as a medicine against poisons.<sup>222</sup> According to al-Qazwīnī, ‘balasān’ resembles rue in its scent and leaves, but it tends to be white in colour. As to its medicinal qualities, he cites Ibn Sīnā: ‘Its berries and leaves are effective against pains in the lung and thigh sinew, epilepsy, dizziness, infertility, snake bites, poisons in general and the scorpion in particular’. It also removes the membrane to extract the embryo and placenta, and it eases difficulties in passing urine and dispels tremors.<sup>223</sup>

**TM:** Balsam oil (Mecca Balsam) is used as an incense and for the preparation of perfumes. Its world supply is limited and expensive.<sup>224</sup> In Iraq use is made of the fruit of the balsam tree, called ‘balasān’, which is identified with ‘afarsemon’. From this fruit a substance is produced which

<sup>216</sup> Assaph, IV.398.

<sup>217</sup> al-Kindī, no. 146.

<sup>218</sup> Donolo, pp. 12–13.

<sup>219</sup> Maimonides, Regimen, 3:11.

<sup>220</sup> Maimonides, Aphorisms, 9:46a; 22:52.

<sup>221</sup> Maimonides, Poisons, p. 108.

<sup>222</sup> Ibn Rushd, p. 157.

<sup>223</sup> al-Qazwīnī, p. 218. Cf. Ibn Sīnā, p. 265; al-Biruni, I, pp. 73–75; II, pp. 79–80; al-Ghāfiqī, no. 117.

<sup>224</sup> Hill, p. 172; Uphof, p. 146.

serves as a drug to dispel gases, to relieve stomach-ache and as a stimulant. In Iran it is used as a component in a medication to treat colds and tremors. In Arabia the resin of the tree is used to treat poisoning and stings, and to cure wounds.<sup>225</sup>

**TAI:** Different reports from medieval times show that it grew in Egypt at a place called 'Ayn Shams (Heliopolis). Its resin was produced by making an incision in the bark, scraping off the gum and collecting it with cotton wool.<sup>226</sup> Feliks researched its production in ancient times.<sup>227</sup> A later description of balsam oil, its uses, and trade in Egypt is given by Frederick Hasselquist, who visited the region in 1750.<sup>228</sup> According to a Genizah fragment it was traded in the Mediterranean in the 11th century.<sup>229</sup>

## Banana

*Musa paradisiacal* (Musaceae), **A:** **mawz**

**D&H:** Big perennial, stem growing underground; the trunk consists of a sheath of leaves. The fruit is big, seedless, with thick heavy green peel, yellow when ripe. It was grown in Jund Falasṭīn at the medieval period, mainly in the Jordan valley.<sup>230</sup>

**PU:** Banana figures in a list of *materia medica* and as a food (T-S Or.1081.J.71).

**TU:** Banana is also mentioned in general medical books (T-S NS 222.225), in a lexicon of *materia medica* (T-S Ar.44.60), and in pharmacopoeias (T-S Ar.45.19).<sup>231</sup>

**OMU:** Banana leaves were used in the medieval period as paper substitutes. The ripe fruit was used to treat liver and spleen diseases, according to Maimonides.

**TM:** Dry, peeled fruit is used to treat skin diseases.<sup>232</sup>

<sup>225</sup> Hooper, p. 104; Uphof, p. 146; Feliks, World, p. 258.

<sup>226</sup> al-Qazwīnī, p. 218. On the cultivation of balsam in Egypt see al-Biruni, I, pp. 73–75; Khusraw, p. 49; al-Idrisi, p. 326; al-Baghdadi, pp. 41–45; Ibn al-Baytar, al-Jami, I, p. 107; Borchard, p. 61. Additional sources are found in Amar, Production, p. 52, n. 15; Milwright.

<sup>227</sup> Feliks, Afarsemon; Feliks, World, pp. 256–258; Feliks, Balsam.

<sup>228</sup> Hasselquist, pp. 293–297.

<sup>229</sup> Gil, Kingdom, II, p. 837, no. 280.

<sup>230</sup> al-Muqaddasi, pp. 175, 179–180, Amar, Production, pp. 259–262.

<sup>231</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>232</sup> Lev & Amar, Ethnic, p. 88.

**TAI:** Banana leaves were used to wrap staple foods in shops in medieval Egypt.<sup>233</sup>

## Barley

*Hordeum sp.* (Poaceae), **A:** *sha'ir, se'urim* (Judaeo-Arabic)

**D&H:** Tall annual (1.5 m), narrow lance-shaped leaves, and ears bearing twin rows of seeds and long bristles.<sup>234</sup> Many and varied cultivated species. Wild species are found in the Mediterranean and the Irano-Turanian phytobotanical zones. Cultivated species are grown all over the world. The kernels were used to produce beer from ancient times. The plant was also used for healing, as a diuretic and as a base for ointments. Dioscorides notes that barley was used to treat inflation of the entrails, inflammation, leprosy, the joints, and abdomen.<sup>235</sup>

**PU:** Barley features in 2 prescriptions (T-S NS 194.70), one for the treatment of the lips and to strengthen the gum (T-S NS 90.65).

**TU:** Barley is mentioned also in books: in recipes for women's complaints, menorrhagia, liver diseases; for cosmetics and for topical uses (flour; T-S Ar.35.363; T-S Ar.45.21; T-S Ar.45.40; T-S NS 163.94). It appears in some prescriptions for unknown uses (T-S Ar.39.451; T-S NS 90.23; T-S NS 90.73) and in lists of *materia medica* (T-S Ar.41.45). It also is found in medical books (T-S Ar.40.175; T-S Ar.41.47; T-S Ar.41.104; T-S Ar.41.137; T-S Ar.42.104; T-S Ar.43.172; T-S Ar.43.225; T-S Ar.44.32; T-S Ar.44.37; T-S Ar.44.86; T-S Ar.44.91; T-S Ar.44.94; T-S Ar.44.101; T-S Ar.44.130; T-S Ar.44.206; T-S Ar.44.209; T-S Ar.45.4; T-S NS 90.71; T-S NS 164.75), in books on dermatology (T-S Ar.45.49), on fevers (T-S Ar.44.57; T-S Ar.44.208; T-S NS 90.52), (T-S Ar.43.114), on paediatrics (T-S Ar.39.311), on dentistry (T-S Ar.42.44), on poisons (T-S Ar.41.116; T-S Ar.44.77), on *materia medica* (T-S Ar.41.44; T-S Ar.42.73; T-S AS 184.374; T-S Or.1080.2.74); in pharmacopoeias (T-S Ar.11.13; T-S Ar.41.96; T-S Ar.44.193; T-S NS 222.21; T-S NS 222.22; T-S NS 305.107; T-S NS 305.212), in quasi-medicine (T-S NS 90.16), and and other fragments (T-S Ar.38.51; T-S NS 90.26; T-S NS 90.46; T-S NS 297.114).<sup>236</sup>

<sup>233</sup> Goitein, Society, IV, p. 246.

<sup>234</sup> Chevallier, p. 218.

<sup>235</sup> Dioscorides, II.108.

<sup>236</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

**OMU:** al-Kindī writes that barley is used to treat deterioration of the memory, gum and teeth ailments, and slow growth of hair and beard.<sup>237</sup> Ibn al-Bayṭār, citing other sources, states that barley was used for the treatment of inflammation of the throat, fever and the stomach.<sup>238</sup> R. Nathan ben Yoel Falaquera recommends barley for a summer diet and for the treatment of fevers. It also increases women's milk production (eaten with fennel).<sup>239</sup>

**TM:** Yemenite Jews used barley to treat swellings, kidney stones, eye inflammations, headaches, and nerves.<sup>240</sup>

**TAI:** Main uses were for beer brewing, animal fodder, and poor people's bread. It is rarely mentioned in connection with urban households or in merchant's letters.<sup>241</sup> Several letters describing harsh conditions in different locations support information on barley prices in Palermo, Susa, Tripoli (North Africa), and Alexandria.<sup>242</sup>

## Beaver

Castoreum, *Castor fiber* (Castoridae), **A:** **qaṣṭūriyūn, jundbādastār**<sup>243</sup>

**D&H:** The common beaver is a rodent inhabiting North America and the northern parts of the Old World, mainly in ponds in forests. It has an oil gland for lubricating its flat tail, which is covered with scales and serves as a paddle for swimming. The dried secretion accumulated on the foreskin of the beaver's penis or its testicles was used as a medicinal substance.<sup>244</sup> According to Levey, medicinal use was made of this secretion and not of the testicles themselves. But since the lumps of dried secretion were sold in pairs, it was falsely assumed that these were beaver testicles.<sup>245</sup> Dioscorides mentions '*kastoros orchis*' and its medicinal applications. He specifically describes its use in treating snakebite and the sting of scorpions and other poisonous creatures, as well as to

<sup>237</sup> al-Kindi, p. 293, no. 168.

<sup>238</sup> Ibn al-Baytar, al-Jami, III, p. 62.

<sup>239</sup> Amar & Buchman, pp. 144–145.

<sup>240</sup> Reiani, p. 26, no. 53.

<sup>241</sup> Goitein, Society, I, pp. 118–119, 211. IV, 243, 260.

<sup>242</sup> Gil, Kingdom, see Indices.

<sup>243</sup> Maimonides, Glossaire, no. 79. Cf. Leclerc, nos. 805, 1792, 1957; Kamal, Encyc., p. 797, no. 361; Ghaleb, p. 274, no. 5713; p. 284, no. 6013.

<sup>244</sup> Plants & Animals, VII, pp. 168–170.

<sup>245</sup> al-Kindi, p. 254, no. 66.

expel the placenta and to induce sneezing, and as an emmenagogue and an abortifacient.<sup>246</sup> According to Maimonides' description given in the first person, it appears that he was acquainted with the animal, its behaviour, and its habits. Although we might deduce from this that he actually saw a beaver in its natural habitat, the fact is that he spent most of his life in Spain, Morocco, and Egypt, where beavers are not found; what Maimonides saw was probably an otter—an animal that lives in Europe, North Africa, and Asia (including the Middle East).

**PU:** Beaver figures in a list (T-S Ar.43.317) and 3 prescriptions: a compound (T-S AS 177.417), one named ma'jūn hibat Allāh (T-S Ar.34.305), and one for the treatment of eye diseases (T-S AS 159.241).

**TU:** Castoreum is mentioned as a simple in several fragments from books on the treatment of entropion and roughness of the eyelids (T-S Ar.39.167), headaches and diseases of the brain (T-S Ar.40.157), jaundice with acute fever and palpitation (T-S NS 305.116), paresis and weakness of the sexual organ, and as an aphrodisiac (T-S AS 179.226). It is also mentioned as a simple in recipes and prescriptions for unknown uses (T-S Ar.41.90; T-S NS 306.54; T-S AS 167.36).<sup>247</sup>

**OMU:** al-Kindī reports the use of 'jundbādasar' as a component in an ointment for the nose and the head, in clysters, as a remedy for insanity, and in other ointments.<sup>248</sup> Benevenuto, the Jerusalem eye-doctor, mentions the use of 'castoreum' as a component in the famous 'Jerusalemite Electuary' which was used to treat cataracts.<sup>249</sup> Maimonides asserts that 'qaṣṭūriyūn' is a component in a remedy for external use to treat the snakebite and stings of other poisonous creatures, in clysters to treat stomach pains and fever, and as a remedy to strengthen the body and the heart.<sup>250</sup>

<sup>246</sup> Dioscorides, II.26.

<sup>247</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>248</sup> al-Kindi, nos. 1, 15, 147, 205. Cf. al-Ghāfiqī, no. 228; al-Biruni, I. pp. 112–113.

<sup>249</sup> Benevenuto, p. 37. On the problematics of this source see the Introduction.

<sup>250</sup> Maimonides, Poisons, pp. 103, 117; Maimonides, Regimen, 2:6; 4:8; Maimonides, Aphorisms, 9:92; 22:16; Maimonides, Answers 3:19.

## Ben Tree

*Moringa peregrina* (Moringaceae), **A: bān**<sup>251</sup>

**D&H:** Tropical tree (up to 8 m), which grows in Sinai, the southern Negev, and the Judean desert. White trunk, pink-whitish flowers, long rounded fruits (up to 30 cm.).<sup>252</sup> al-Ghāfiqī and Ibn al-Bayṭār in their entries for ‘bān’ cite Dioscorides who writes about the locality of the tree and notes that it is found in ‘Filastīn’ (especially in Petra) and is known there as ‘Baṭīr’.<sup>253</sup>

**PU:** Ben tree appears in a prescription for the treatment of cough (T-S K25.116).

**TU:** Ben tree also mentioned also in books: in recipes for local application to the temples for headache (T-S Ar.39.20). Also in medical books (T-S Ar.11.30; T-S Ar.41.47), in pharmacopoeias (T-S NS 305.107), and in other fragments (T-S Ar.38.40).<sup>254</sup>

**OMU:** Ben oil increases growth of hair, strengthens the teeth and gums, acts against nosebleed, delays old age, strengthens the senses, and increases sexual potency; treats leprosy, skin diseases, toothache, boils, spleen and liver troubles, rheumatism; it is an emetic and a purgative.<sup>255</sup>

**TM:** The Sinai Bedouin used the plant against lice on camels and to make tent poles.<sup>256</sup> In Egypt the oil from the seeds was used to anoint the body, and women ate the seeds to fatten themselves.<sup>257</sup>

**TAI:** Ben trees grew in Egypt and some were imported from the Dead Sea shores and the Jordan river.<sup>258</sup> The material was used, among other things, to light lamps on Temple Mount in the early Muslim period.<sup>259</sup> The oil was traded in the eastern Mediterranean and sent even to Sicily and Bijaya (Algeria) (it seems to be very sensitive especially to heat; T-S 16.244), and was used sometimes to improve musk oil.<sup>260</sup>

<sup>251</sup> Maimonides, Glossaire, no. 378; Ibn al-Baytar, al-Jami, I, pp. 79–81; Dinsmore & Dalman, no. 406; Issa, p. 120, no. 18.

<sup>252</sup> Plants & Animals, X, pp. 123–124.

<sup>253</sup> Ghafiqi, no. 118; Ibn al-Baytar, al-Jami, I, pp. 79–81; Leclerc, no. 226.

<sup>254</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>255</sup> al-Kindi, nos. 74, 141, 144, 220; Ibn al-Baytar, al-Jami, I, pp. 79–81; Maimonides, Sexual, 18:2; Maimonides, Regimen, 3:11; 4:13; al-Qazwīnī, p. 218. Cf. Ibn Sina, p. 264.

<sup>256</sup> Levey, Beduins, p. 80; *EI*, ‘Ban’ entry.

<sup>257</sup> Levey, Beduins, p. 80; Osborn, p. 173.

<sup>258</sup> Amar, Jordan.

<sup>259</sup> Amar & Seri, p. 50; al-Nuwayri, XII, pp. 79–80, Cf. al-‘Asali, Ma’ahid, p. 279; al-Wasti, p. 83; al-Ghāfiqī, no. 118.

<sup>260</sup> Gil, Kingdom, III, p. 68, IV, p. 119, no. 638.

## Betel palm

Areca nut, *Areca catechu* (Arecaceae), **A:** *fawfal*, *ʾaṭmāt*

**D&H:** Tropical Asian tall palm tree, big fruits shaped like chicken egg, grey seeds.<sup>261</sup>

**PU:** Betel figures in a list of *materia medica* (T-S Ar.30.274) and in a prescription (T-S Ar.39.451).

**TU:** Betel appears in recipes for liver disease and for unknown uses (T-S Ar.45.40). Also mentioned in medical books (T-S NS 90.71), some on skin diseases (T-S Ar.43.231) and on *materia medica* and in pharmacopeias (T-S Or.1080.2.74; T-S Or.1081.1.21).<sup>262</sup>

**OMU:** The seeds were chewed as stimulants and astringents, and to expel worms.<sup>263</sup>

## Betel-pepper

*Piper betel* (Piperaceae),<sup>264</sup> **A:** *tānbūl*

**D&H:** Slender climbing vine (5 m), with heart-shaped leaves, tiny yellow-green flowers and small spherical fruits.<sup>265</sup> In various tropical lands and islands the inhabitants chew the seeds to expel stomach worms and as sedative and astringent.<sup>266</sup>

**PU:** Betel-pepper figures in a list of *materia medica* (T-S Ar.43.317).

**TU:** Betel-pepper appears in medical books in a recipe for palpitation, as a purgative, an emmenagogue and an abortifacient (also for unknown uses; T-S Ar.42.199; T-S Ar.45.30).<sup>267</sup>

**OMU:** Ibn Sīnā recommends betel pepper to improve the smell of the breath, to strengthen teeth and gums; a decoction of the leaves with wine is also recommended for skin diseases; improve the smell of gases, and help digestion.<sup>268</sup>

**TM:** The seeds are used as treatment to ease sickness after meals.<sup>269</sup>

<sup>261</sup> Lev & Amar, *Ethnic*, p. 100.

<sup>262</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>263</sup> *Ibid.*

<sup>264</sup> Issa, p. 140, no. 20.

<sup>265</sup> Chevallier, p. 248.

<sup>266</sup> Lev & Amar, *Ethnic*, p. 100.

<sup>267</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>268</sup> Ibn Sīnā, I, p. 445.

<sup>269</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.



**TAI:** Leaves of betel-pepper were traded in the Genizah society,<sup>270</sup> as was the fruit, which is mentioned in merchants' letters regarding its trade in Alexandria and Cairo in the 11th century.<sup>271</sup>

### Bezoar stone

#### A: bādzahr, bādazuhr 'armanī

**D&H:** Stone formed in the intestine of wild or domesticated animals. It was extracted from the gall bladder of goats (or even elephants),<sup>272</sup> and used as medicine mainly to treat poisoning. The name is a Persian word meaning antidote.<sup>273</sup>

**PU:** Bezoar stone figures in a list of *materia medica* (Armenian, T-S AS 184.234).

**TU:** Bezoar also appears in a medical book in a chapter dealing on treatment of overdosing and poisoning (T-S Ar.44.77).<sup>274</sup>

**OMU:** al-Kindī writes that bezoar stones were used to treat poisons.<sup>275</sup> al-Ghāfiqī cites other physicians on the use of the bezoar stone as an antidote against 'hot' and 'cold' poisons caused by animals as well as vegetables. It was also used to treat high fever, and ophthalmic conditions.<sup>276</sup>

### Bird

#### A: 'uṣfūr

**D&H:** Different bird species and various organs were used for medicine from early times. The Arabic name 'uṣfūr was used as general name for birds, but from the medieval period to the present day this word is identified by various ethnic groups in the Middle East as sparrow (*Passer domesticus*). The sparrow was used in medicine and was eaten.<sup>277</sup>

**PU:** Bird figures in a list of *materia medica* (T-S AS 182.233).

<sup>270</sup> Goitein, Society, I, p. 154.

<sup>271</sup> Gil, Kingdom, II, p. 866, no. 294; IV, p. 586, no. 794.

<sup>272</sup> Maimonides, Glossaire, no. 316; al-Kindi, p. 313, no. 225.

<sup>273</sup> al-Ghāfiqī, pp. 377–380, no. 185.

<sup>274</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>275</sup> al-Kindi, p. 313, no. 225.

<sup>276</sup> al-Ghāfiqī, pp. 377–380, no. 185.

<sup>277</sup> Amar, Fowl, pp. 80–86.

**TU:** Birds also appear in a medical book on sexual medicine (T-S Ar.41.75), in a recipe dealing with dentistry and oral hygiene (T-S Or. 1080.7.17), and in a lexicon of *materia medica* (T-S AS 184.234).<sup>278</sup>

**OMU:** Birds and bird's brains were recommended by Maimonides for increasing men's sexual vigour, and for the treatment of partial paralyses (hemiplegia).<sup>279</sup>

**TM:** Sparrow blood was used to treat wounds and bruises.<sup>280</sup>

## Birthwort

Apple of earth, *Aristolochia* sp. (Aristolochiaceae), **A:** **zarāwand**<sup>281</sup>

**D&H:** The genus has 300 species that grow mainly in warm climates. The two main species are long aristolochia (*Aristolochia longa*) and round aristolochia (*Aristolochia rotunda*).<sup>282</sup> The scientific name of the genus is associated with an ancient belief that it eases childbirth.<sup>283</sup> Dioscorides describes various species of *Aristolochia*, notes their toxicity, and mentions their medical uses: counteracting poisons, accelerating menstruation, aborting fetuses, causing severe diarrhoea, curing wounds and diseases such as asthma and spleen diseases, treating side pains and problems of the teeth and gums, and reducing fever.<sup>284</sup>

**PU:** Iraqi birthwort features in a list of *materia medica* (T-S Ar.39.307), long birthwort in a prescription for unknown uses (T-S Ar.41.81), and common birthwort in a prescription for the treatment of vomiting (T-S AS 156.272).

**TU:** Birthwort is also mentioned in medical books in recipes for flatulence, warts, dysuria, dysmenorrhoea, and hard swellings (T-S Ar.42.151). Birthwort root (T-S AS 180.41) and birthwort appear as simples in a lexicon of *materia medica* (T-S AS 166.126) and in a recipe for unknown uses (T-S AS 179.283r). Long birthwort appears in a prescription for unknown uses (T-S AS 167.36).<sup>285</sup>

<sup>278</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>279</sup> Maimonides, *Sexual*, p. 50, Maimonides, *Aphorisms*, 20:69.

<sup>280</sup> Amar, *Fowl*, p. 82.

<sup>281</sup> Maimonides, *Glossaire*, no. 133; Issa, p. 21, no. 4.

<sup>282</sup> Additional names: Leclerc, nos. 58, 243, 1300, 1744, 2135. Cf. Issa, p. 21, no. 4.

<sup>283</sup> *Plants & Animals*, X, p. 39.

<sup>284</sup> Dioscorides, III.4–6.

<sup>285</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

**OMU:** The physician Assaf describes the plant and notes that it served to cure wounds, tuberculosis, malaria, diseases of the spleen, the intestines, the kidneys, and the liver; to stop urination, to counteract poisons, and to treat injuries caused by venomous creatures.<sup>286</sup> According to al-Kindī, the long species was a component in medications to treat infections, lymph glands, stomach ulcers, and haemorrhoids, and also as an ointment for the nose.<sup>287</sup> The round species served as a component in a medication to treat teeth, infection of the sinews, and pains of the back and joints.<sup>288</sup> Maimonides describes the use of various species in medications against bites, poisons, and stings.<sup>289</sup> Elsewhere he describes the use of the round species to prepare a concoction to treat asthma.<sup>290</sup>

**TM:** Among the Arabs of Israel and in Iraq it was customary to grind the stem root of *Aristolochia bottae* and to use the powder for disinfecting and curing wounds and skin diseases of humans and sheep.<sup>291</sup> The stem root served in the East as an expensive medicinal substance. The taste of the roots of this climbing plant is bitter and pungent, and it acts as a stimulant and a strengthening substance, and sometimes also as a medicine for snakebite. Local people use it to cure diseases of the chest and stomach. The round species, which also grows in Iran, has a pungent smell and taste; it is used as a stimulant, a diuretic, and a carminative, and it accelerates menstruation.<sup>292</sup>

**TAI:** According to al-Dimashqī this was one of the 90 beneficial plants that grew on Mount Lebanon that could provide a livelihood for those who gathered them.<sup>293</sup>

### Bitter vetch

*Vicia ervilia* (Fabaceae), **A: kirsinna, kirsanna**<sup>294</sup>

**D&H:** The vetch genus, important for economic reasons, has 150 species. Bitter vetch has served as food in the Levant since prehistoric times.<sup>295</sup>

<sup>286</sup> Assaph, IV, 404, 420.

<sup>287</sup> al-Kindī, nos. 10, 38, 39, 45, 54, 62, 205.

<sup>288</sup> Ibid., nos. 102, 138. Cf. Ibn Sina, pp. 311–312.

<sup>289</sup> Maimonides, Poisons, pp. 110, 113, 116, 119; Maimonides, Aphorisms, 21:75; Saladino, p. 97.

<sup>290</sup> Maimonides, Sexual, Introduction 6; Maimonides, Asthma, 12:5.

<sup>291</sup> Chizik, p. 731.

<sup>292</sup> Hooper, pp. 86–87; Uphof, p. 48.

<sup>293</sup> al-Dimashqī, p. 199.

<sup>294</sup> Issa, p. 188, no. 18.

<sup>295</sup> Lev, Kebara, p. 46.

According to the Mishna this is a minor agricultural crop and fodder for animals.<sup>296</sup> In the classical era it was considered a medicinal plant. Dioscorides, for example, reports on the use of *Orobos* to treat stomach problems, skin diseases, dog bite and snakebite, and on its effectiveness in softening the breasts.<sup>297</sup>

**PU:** Bitter vetch figures in a list of *materia medica* (T-S Ar.35.366).

**TU:** Bitter vetch is also mentioned also in medical books (T-S Ar.40.104; T-S Ar.40.162; 41.134) on dermatology (T-S Ar.45.49), on poisons (T-S Ar.41.116; T-S Ar.43.43), *materia medica* (T-S Ar.39.451; T-S Ar.41.130); in a pharmacopoeia (T-S AS 181.271), in another on treating complaints in the joints of the upper and lower extremities (T-S AS 181.271), and in a recipe (unknown uses; T-S Or.1080.3.11).<sup>298</sup>

**OMU:** The physician Assaf mentions the use of the plant to treat cough and the heart, and to cure skin diseases, leprosy, blood in the urine, and the spitting of blood.<sup>299</sup> al-Kindī reports the use of the plant to treat skin diseases and cancer.<sup>300</sup> Maimonides states that flour made of the seeds is a hot and dry drug, and serves as a medication to cure burns, to disinfect, and to cleanse.<sup>301</sup> Ibn al-Bayṭār writes that the plant is a diuretic, and it cleans and prevents obstructions in the urinary tract. Excessive eating sometimes causes headaches. The pulverized seeds mixed with honey cleanse and cure external wounds and skin diseases, and remove freckles. This medication is also used to reduce swellings in the breasts and in other parts of the body. The powdered seeds kneaded with wine is an external medication for the bite of a dog, a human, or a snake. The powder also serves to relieve dysentery and to cure cracked skin. Ibn al-Bayṭār cites other physicians who note that the plant is effective against cough and scorpion stings, for curing and healing wounds, and for sore gums.<sup>302</sup>

<sup>296</sup> Low, II, pp. 481–491; Feliks, Plants, p. 91.

<sup>297</sup> Dioscorides, II.131.

<sup>298</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>299</sup> Assaph, IV, 172, 413.

<sup>300</sup> al-Kindī, nos. 31, 40, 48.

<sup>301</sup> Maimonides, Aphorisms, 15:11, 55; 21: 61; 23:33. 100; Maimonides, Poisons, pp. 126, 130, 185.

<sup>302</sup> Ibn al-Baytar, al-Jami, IV, pp. 63–64; Leclerc, no. 1912. Cf. Ibn Sina, p. 342; al-Antaki, p. 271.

**TM:** It is a cultivated plant for feeding animals and is food for humans.<sup>303</sup> In Egypt it was taken as an expectorant. It served to increase the production of mother's milk and to treat diseases of the chest and skin.<sup>304</sup>  
**TAI:** al-Birūnī states that it grew in Egypt<sup>305</sup> and the Levant.<sup>306</sup>

### Bitumen trefoil

*Bituminaria bituminosa* (Fabaceae), **A:** 'itrīful<sup>307</sup>

**D&H:** Perennial plants, leaves similar to clover leaves; inflorescence has many flowers. Grows wild in fields in the Mediterranean phytogeographical zone.

**PU:** Yellow bitumen trefoil figures in a prescription (T-S Ar.41.81).

**TU:** Not yet found.

### Black cummin

*Nigella sativa* (Ranunculaceae), **A:** shūnīz, qīzh, ḥabba sawdā<sup>308</sup>

**D&H:** Annual herb (30 cm), with upright branching stem, fine deeply cut leaves, grey-blue flowers, dentate seedpods. The black seeds are used as condiment and for medicine.<sup>309</sup> In ancient Babylonia the plant was used externally to treat swellings, the hair, and bruises, and internally to cure stomach problems.<sup>310</sup> Classical physicians such as Galen described the use of black cummin to treat infections in the nose, while Dioscorides describes the plant Melanthon and its black seeds with their pungent smell, and reports their use as food and for curative purposes: to treat headaches and toothache, to cure diseases of the eyes and skin and leprosy, to eliminate intestinal worms, to accelerate menstruation, to increase urine flow and milk flow, and to repel snakes.<sup>311</sup> Muslim medi-

<sup>303</sup> Zohary, p. 446; Uphof, p. 543.

<sup>304</sup> Ducros, p. 42, no. 75.

<sup>305</sup> al-Biruni, I, pp. 82, 276.

<sup>306</sup> Amar, Production, pp. 85–86.

<sup>307</sup> Issa, p. 149, no. 11.

<sup>308</sup> Maimonides, Glossaire, no. 365; Issa, p. 125, no. 3; Dinsmore & Dalman, nos. 30–31; Leclerc, nos. 415, 573, 1972. Discussion of the various names of the plant and other medieval references in Amar, Production, p. 268.

<sup>309</sup> Chevallier, p. 237.

<sup>310</sup> al-Kindi, p. 295, no. 174.

<sup>311</sup> Dioscorides, III.93.

cine regarded black cummin seeds as a medicine for colds and many other diseases.<sup>312</sup>

**PU:** Black cummin figures twice in a list of *materia medica* (T-S NS 305.69) and in 2 prescriptions (T-S Ar.40.53; T-S NS 297.17).

**TU:** Black cummin is also mentioned in medical books (T-S Ar.40.111) on ophthalmology (T-S Ar.39.228; T-S Ar.44.13; T-S Ar.44.127; T-S NS 306.168), paediatrics (T-S Ar.45.20), fevers (T-S NS 222.31), poisons (T-S Ar.43.43), *materia medica* (T-S Ar.40.45; T-S Ar.40.64; T-S Ar.41.118; T-S Ar.44.193; T-S Ar.44.204; T-S Ar.45.14; T-S NS 222.58); in recipes for emmenagogues and abortifacients (T-S Ar.45.30) and in other fragments (T-S Ar.38.124).<sup>313</sup>

**OMU:** The physician Assaf sets out medical uses, for example, to treat colds in the head, chest and body, to kill intestinal worms, to increase semen and increase virility; to cure leprosy, bright skin spots, infection in the nose, and to enrich hair growth. It also served as a component in a medication against poisons and the stings of venomous creatures.<sup>314</sup> al-Kindī describes the use of the seeds in a preparation against skin irritations and in a medication against insanity.<sup>315</sup> Maimonides notes the use of black cummin to prepare a sneezing powder, to reduce facial swellings, to prepare a medication against bites, and to treat the bite of a poisonous spider.<sup>316</sup> Black cummin is listed among the hot and dry drugs.<sup>317</sup> al-Qazwīnī cites various physicians who describe the use of the plant to eliminate fleas and mosquitoes, to remove face freckles, to straighten the hair, to expel crawling insects, to remove skin moles, and to treat leukoderma albinum, leprosy, colds, and toothache.<sup>318</sup> Ibn al-Bayṭār cites al-Tamīmī who relates the use of black cummin oil against paralysis and facial spasms.<sup>319</sup>

**TM:** Black cummin seeds serve in the treatment of jaundice and intestinal worms.<sup>320</sup> The Bedouin use the seeds to cure colds, toothache, and

<sup>312</sup> Ibn al-Qayyim, p. 195; Levey, Ibn Masawayh, p. 404.

<sup>313</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>314</sup> Assaph, IV, 411.

<sup>315</sup> al-Kindī, nos. 47, 205. Cf. Ibn Sina, p. 437.

<sup>316</sup> Maimonides, Aphorisms, 15:58; 22:19; Maimonides, Poisons, pp. 115, 123. Cf. al-Biruni, I, pp. 363–364; II, p. 87.

<sup>317</sup> Maimonides, Aphorisms, 9:88; 21:80.

<sup>318</sup> al-Qazwīnī, p. 254. Cf. Ibn al-Baytar, al-Jami, III, pp. 72–73; Leclerc, no. 1351; al-Antaki, pp. 219–220.

<sup>319</sup> Ibn al-Baytar, al-Jami, II, p. 113; Leclerc, no. 941.

<sup>320</sup> Uphof, p. 361.

shortness of breath.<sup>321</sup> Yemenite Jews used the seeds to prevent excessive sweating, to dispel bad odours, to eliminate intestinal worms, to treat swellings, wounds, eye infections, and scabies, to ease breathing, to lessen phlegm, to cure colds, fever and headaches, and to increase urine excretion. The seeds also served as a component in medications against sneezing and mental illnesses.<sup>322</sup> The Jews of Iraq used the seeds to prepare a potion that helps to sustain pregnancy. The Jews of Algeria used it to treat toothache and colds, while the Jews of Tunisia took it against constipation, nausea, stomach-ache, and vomiting. The Jews of Libya took it for colds, to open obstructions in the urinary tract, and to accelerate menstruation. The Arabs of Israel use the seeds to prepare a medication containing 40 kinds of plants, a panacea.<sup>323</sup>

**TAI:** Black cumin is listed among the wild plants used as condiments at the time of Crusader rule in the Land of Israel.<sup>324</sup> It appears in the Genizah in a merchant's list of incenses and condiments.<sup>325</sup>

## Box

*Buxus sempervirens* (Buxaceae),<sup>326</sup> **A:** *shimshār*<sup>327</sup>

**D&H:** The species Evergreen Box (*Buxus sempervirens*) is a cultivated tree that grows in Mediterranean countries. According to the Jewish Sages, vessels are made of box wood (Mishna, Kelim, 12:8) and jam is made of the fruit (Bab.Talmud, Yoma, 37a).

**PU:** Box features in a prescription (T-S Ar.41.110) and might appear misspelled in a list of *materia medica* (T-S Ar.35.366).

**TU:** Box also appears in Ibn al-Bayṭār's book on *materia medica* (T-S Ar.39.208).<sup>328</sup>

**OMU:** al-Bīrūnī and Ibn al-Bayṭār cite various physicians who describe the resemblance of the tree to the myrtle and the ability of its black fruit to cause constriction in the bowels. They also tell of the use of the

<sup>321</sup> Additional uses in the Land of Israel and the region in Krispil, p. 1285.

<sup>322</sup> Reiani, no. 75.

<sup>323</sup> Krispil, p. 1289.

<sup>324</sup> Praver, Colonial, p. 441; al-Nuwayri, VIII, p. 258.

<sup>325</sup> Gil, Kingdom, IV, p. 653, no. 820.

<sup>326</sup> Zohary, p. 474; Feliks, World, p. 84; Uphof, p. 92; Grieve, p. 121.

<sup>327</sup> Maimonides, Glossaire, no. 9; Ibn al-Baytar, al-Jami, I, 103; Leclerc, no. 315; Ibn al-Baytar, al-Jami II, p. 69; Leclerc, no. 1342. Discussion of identity in Amar, Ibn al-Baytar, p. 56, n. 26; Issa, p. 34, no. 24.

<sup>328</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

sawdust to strengthen the hair and to treat headaches and wounds.<sup>329</sup> al-Ghāfiqī mentions its constricting properties.<sup>330</sup> Dāwud al-Anṭākī reports that the tree (mainly the seeds) was used for soothing and drying dampness, and treating mouth wounds, rubella, fungus, headaches, and weakness of the nerves and bones.<sup>331</sup>

**TM:** In Europe the box tree was used as a purgative, to induce sweating, to destroy worms, to relieve pain, and to treat sexual diseases, skin diseases, and joint inflammations.<sup>332</sup>

**TAI:** al-Dimashqī says that it was one of the 90 species of effective plants found on Mount Lebanon from whose collection a living can be made.<sup>333</sup>

### Broad-leaved pepperwort

*Lepidium latifolium* (Brassicaceae),<sup>334</sup> **A:** *shīṭaraj*, ‘*uṣb*<sup>335</sup>

**D&H:** A kind of garden cress, which according to Levey may even be a species of *Plumbago*.<sup>336</sup> Dioscorides applied *Lepidium*, which he describes as small herb with sharp tasting leaves, for ulcers, sciatica, leprosy, and toothache.<sup>337</sup>

**PU:** Broad-leaved pepperwort figures in a list of *materia medica* (T-S Ar.35.328).

**TU:** Broad-leaved pepperwort is also mentioned in medical books (T-S Ar.40.5; T-S Ar.43.88; T-S NS 306.25; T-S Or.1080 1.72) on dermatology (T-S Ar.42.22; T-S NS 90.66), dentistry (T-S Ar.42.39), on *materia medica* (T-S NS 305.84), in pharmacopoeias (T-S Ar.41.90; T-S Ar.45.14; T-S Or.1081.1.6), in recipes for unknown uses (T-S Ar.41.81; T-S Ar.44.222), and in a recipe booklet (T-S Ar.44.187).<sup>338</sup>

<sup>329</sup> al-Biruni, I, p. 360; Ibn al-Baytar, al-Jami, I, p. 103; Leclerc, no. 315.

<sup>330</sup> al-Ghāfiqī, no. 122.

<sup>331</sup> al-Antakī, pp. 80–81.

<sup>332</sup> Grieve, p. 121.

<sup>333</sup> al-Dimashqī, p. 199.

<sup>334</sup> Issa, p. 107, no. 12; Maimonides, Glossaire, no. 367.

<sup>335</sup> Maimonides, Glossaire, p. 53, no. 163; al-Biruni, II, p. 88; Issa, p. 108, no. 1; Dinsmore & Dalman, no. 136; Crowfoot & Baldensperger, p. 101.

<sup>336</sup> al-Kindi, p. 296, no. 179; Maimonides, Glossaire, no. 367.

<sup>337</sup> Dioscorides, II.205.

<sup>338</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.



**OMU:** al-Kindī used the plant for vitiligo alba.<sup>339</sup> R. Nathan ben Yoel Falaquera recommends it for skin diseases (with wheat), gout, and diseases of the spleen.<sup>340</sup>

**TAI:** Ibn al-Bayṭār states in his entry ‘khāmisha’ that this is the name for ‘shīṭaraj’ which is given by the residents of Jerusalem and its environs in the al-Shām region.<sup>341</sup> The Jewish pharmacist al-Kūhīn al-‘Aṭṭār al-Isrā’īlī wrote that ‘A’ras’ is ‘al-shīṭaraj,’ and the people of al-Shām call it ‘al-khāmisha.’<sup>342</sup>

## Bryony

*Bryonia cretica* (Cucurbitaceae), **A:** *fāshirā*, *hazārjishān*<sup>343</sup>

**D&H:** Perennial climbing vine, with fleshy taproot, has straggling vine stem with tendrils, greenish flowers, and red berries.<sup>344</sup> The plant served in the past as a medicinal plant because of the toxicity of the fruit and root stem, and it was even cultivated for this purpose.<sup>345</sup> Dioscorides for example, describes *Ampelos leuke*, which is also called Bryony, and lists its medical uses: a diuretic, a purgative, to soothe skin diseases and burns, to cure infections and putrescent wounds, and even epilepsy.<sup>346</sup> An additional widespread species used for medical purposes is the Syrian Bryony (*Bryonia syriaca*).

**PU:** Bryony figures in a list of *materia medica* (T-S Ar.34.146).

**TU:** Bryony is mentioned in general medical books (T-S Ar.40.5).<sup>347</sup>

**OMU:** The physician Assaf states that the plant served to treat pains in the womb.<sup>348</sup> al-Kindī reports its use to reduce swellings.<sup>349</sup> Ibn al-Bayṭār cites Dioscorides who notes that the fruit removes hair from the skin and cures skin diseases; the shoots are a diuretic and purgative

<sup>339</sup> al-Kindī, pp. 296, no. 179.

<sup>340</sup> Amar & Buchman, p. 247.

<sup>341</sup> Ibn al-Baytar, al-Jami, II, p. 46; Leclerc, no. 751.

<sup>342</sup> Kohen, al-Attar, p. 209. According to Issa, p. 108 this is garden cress, but in Amar’s opinion it is a local term for tall cress.

<sup>343</sup> Maimonides, Glossaire, nos. 311, 312; Issa, p. 34, no. 2; Ibn al-Baytar, Tafsir, p. 312, nos. 4–107; Leclerc, nos. 385, 1655.

<sup>344</sup> Chevallier, p. 178.

<sup>345</sup> Plants & Animals, XI, p. 122.

<sup>346</sup> Dioscorides, IV.184–185.

<sup>347</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>348</sup> Assaph, IV, 396.

<sup>349</sup> al-Kindī, no. 121. The editor identifies this with white bryony or with grape vine.

drug, and help to treat ulcers and abscesses; its juice increases mother's milk, but excessive doses cause vomiting; the roots cleanse the skin and remove freckles, bunions, boils, and scars. Cooking the root in oil creates an ointment that relieves pains, cures haemorrhoids, reduces swellings, and knits broken bones. Drinking this substance cures epilepsy, paralysis, stroke, and the bite of the adder, and causes abortion. According to Galen, the leaves constrict the stomach and stimulate urination. The root softens the hardened spleen and used externally it cures skin diseases.<sup>350</sup>

**TM:** In Iraq and in Europe, various kinds of bryony were used to treat cough, lung infection, and tuberculosis. They also served as a purgative and a diuretic, to accelerate menstruation, as an expectorant, and as a carminative.<sup>351</sup>

**TAI:** Ibn al-Bayṭār and Dāwud al-Anṭākī mention the various names of the plant and state it grows in the Levant.<sup>352</sup>

## Cabbage

*Brassica oleracea* (Cruciferae),<sup>353</sup> **A: qunnabīṭ, qarnabīṭ, kurnub**<sup>354</sup>

**D&H:** Biennial or perennial herb (2.5 m), with thick stem, grey leaves, and yellow flowers. In the first year it produces a greatly enlarged terminal buds that develops into the familiar cabbage head in late summer.<sup>355</sup>

During the Middle Ages a few species of cabbage were in use, mainly Leafy Cabbage (*Brassica oleracea* var. *capitata*) and Cauliflower (*Brassica oleracea* var. *botrytis*).<sup>356</sup> Cabbage was a cultivated plant in Egypt and Greece in early times. Dioscorides describes *Krambe emeros* and recommends its use to treat the stomach and snakebite, to accelerate menstruation, to cure infections and skin diseases, to eliminate worms,

<sup>350</sup> Ibn al-Baytar, al-Jami, III, p. 153; Leclerc, no. 1654. Cf. Ibn Sina, p. 407; al-Biruni, I, pp. 248–249.

<sup>351</sup> al-Rawi & Chaakravarty, p. 20, with contents of active substances; Uphof, p. 88; Grieve, pp. 130–131.

<sup>352</sup> Ibn al-Baytar, Tafsir, p. 312, nos. 4–107. Medical uses in Ibn Sina, pp. 407–408; al-Antaki, p. 247.

<sup>353</sup> Issa, p. 33, nos. 2–4.

<sup>354</sup> For identification and synonyms: Maimonides, Glossaire, no. 184; Issa, p. 33, nos. 3–4; Dietrich, p. 140; Amar, Production, p. 196; Dinsmore & Dalman, p. 107.

<sup>355</sup> Chevallier, p. 178.

<sup>356</sup> Plants & Animals, XII, p. 72.

and to soothe pains.<sup>357</sup> Cabbage is mentioned in the Mishna in various connections (Kilayim 1:3; Shabbat, 38:1; Berakhot, 44:2), some of them medical (Berakhot 51:1). Maimonides states that 'kurnub' was the name of the 'Shāmī' (Syrian) cabbage, as it was called by the people of Egypt, and the reference is to 'qanbiṭ'.<sup>358</sup>

**PU:** Cabbage features a prescription for unknown uses (T-S Ar.30.65).

**TU:** Cabbage is also mentioned in general medical books [for wind, warts, dysuria, dysmenorrhoea, and hard swelling, and as an abortifacient when the foetus is dead; T-S Ar.42.151], on dermatology (T-S Ar.42.22; T-S NS 90.60; T-S Ar.43.114; T-S Ar.45.49), on *materia medica* (T-S Ar.11.17; T-S Ar.42.73; T-S Or.1080.2.74), in pharmacopoeias (drinks prepared from cabbage leaves and additional materials; T-S NS 222.22), in recipes for the foot (T-S Ar.11.30.), and quasi-medicine (T-S Ar.11.17).<sup>359</sup>

**OMU:** al-Kindī mentions the use of the plant to relieve stomach ulcers which opened into the stomach interior.<sup>360</sup> According to Maimonides, the plant is a poor food, especially when eaten raw and uncooked. Elsewhere the cabbage is listed among foods easy to digest. Quoting Ibn Zuhr, Maimonides reports that cabbage improves the voice and cures hoarseness. The plant extract serves as a component in a compress (bandage) placed over the bite of an adder, and its seeds are a component in a medication against intentional food poisoning. The plant was considered a hot and dry drug.<sup>361</sup> In an article, Maimonides states that it is a strong purgative.<sup>362</sup> Ibn al-Bayṭār gives a description of the plant, its species, and its medical uses such as reducing swellings in the limbs, and curing cough, pains of the spleen, burns, skin diseases, dog bite, headache, cancer, and haemorrhoids.<sup>363</sup>

<sup>357</sup> Dioscorides, II.146.

<sup>358</sup> Maimonides, Glossaire, no. 184.

<sup>359</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>360</sup> al-Kindī, no. 50, and in detail also in entry no. 262, p. 326.

<sup>361</sup> Maimonides, Regimen, 1:11; Maimonides, Aphorisms, 20:49, 60, 81; 21: 69; 22: 45; Maimonides, Poisons, pp. 127, 147.

<sup>362</sup> Maimonides, Regimen, IV, 7. See also, no. 56.

<sup>363</sup> Ibn al-Baytar, al-Jami, IV, pp. 59–61; Leclerc, no. 1909. Cf. al-Biruni, I, pp. 276–277; Ibn Sina, pp. 346–347.

## Calamus

Sweet-flag, *Acorus calamus* (Araceae), **A: wajj, qaṣab al-dharīra**<sup>364</sup>

**D&H:** Tropical plant that grows wild in moist habitats, especially in southeast Asia near rivers, swamps, and lakes, and presently in other regions across the globe. It has fragrant rhizomes. Dioscorides writes that the decoction of the boiled root is good for pain in the side, chest, liver, colic convulsions, and spleen.<sup>365</sup>

**PU:** Calamus figures in 2 prescription (T-S Ar.30.291), and wood of calamus is found in another prescription for small 'itriful (T-S Ar.42.67).

**TU:** Calamus is also mentioned in medical books: in recipes for stomach ailments, gastro-intestinal complaints, and colic, and as a general tonic (T-S Ar.40.91; T-S Ar.43.320; T-S Ar.45.28), in some for unknown uses (T-S Ar.41.81), and in a letter in which *materia medica* are mentioned (T-S Ar.43.245). Calamus appears in general medical books (T-S Ar.40.160 [umbilical hernia and incessant crying among children]; T-S Ar.41.78; T-S Ar.44.91; T-S Ar.44.139; T-S Ar.44.148; T-S Ar.44.149; T-S Or.1080.6.15) on ophthalmology (T-S Ar.41.24 [eye drops for hypertrophy, atrophy of the canthi]; T-S Ar.45.41; T-S NS 222.38), on dermatology (T-S Ar.42.22), on M.M. (T-S Ar.40.157 [eye drops for hypertrophy, atrophy of the canthi]; T-S Ar.41.29; T-S Ar.44.204), in pharmacopoeias (T-S Ar.40.64; T-S Or.1080.1.6), and in other fragments (T-S Or.1080.13.12).<sup>366</sup>

**OMU:** The Arabs used the plant as an aphrodisiac and carminative. al-Kindī writes that it is used to treat caries and halitosis, to polish the teeth, and to cure insanity and deterioration of memory.<sup>367</sup> Ibn al-Bayṭar states that it is good for the stomach, the liver, and the nerves.<sup>368</sup>

**TM:** Calamus is used in modern Egypt as an emmenagogue, a sedative, and for eye diseases.<sup>369</sup> In India and Iran it is applied as an aromatic stimulant, an insecticide, an insectifuge, and as a tonic, and for rheumatism.<sup>370</sup>

<sup>364</sup> Issa, p. 5, no. 6; Maimonides, Glossaire, no. 125, 329, 336.

<sup>365</sup> Dioscorides, I.17.

<sup>366</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>367</sup> al-Kindi, p. 343, no. 316.

<sup>368</sup> Ibn al-Baytar, al-Jami, IV, p. 22; Leclerc, no. 2270.

<sup>369</sup> Ducros, p. 108, no. 189.

<sup>370</sup> Hooper, p. 80.

## Cannabis

Indian Hemp,<sup>371</sup> *Cannabis sativa* var. *indica* (Cannabaceae), **A: qun-nab**<sup>372</sup>

**D&H:** Erect branching annual (4 m), with fine, serrated segmented leaves. Male and female plants flower; female plant produces seeds.<sup>373</sup> Cannabis is listed in the Ebers Papyrus among the medicinal plants in use in Egypt in the 16th century BCE. The Chinese, Assyrians, and Indians also grew it thousands of years ago, mainly to produce fibres. The Chinese were apparently the first to discover its medical properties and used the oil of the plant as an anaesthetic during surgery. This use was transmitted from China to India, the Near East, North Africa, and ancient Greece. In India its use even entered religious cultic rites.<sup>374</sup> Dioscorides notes the use of *Kannabis hemeros* to relieve earache.<sup>375</sup>

**PU:** Cannabis figures in 4 lists of *materia medica* (T-S Ar.34.146; T-S Ar.43.315; T-S AS 181.109; T-S NS 224.65) and in a prescription for unknown uses (T-S Or.1080.1.87).

**TU:** Cannabis is also mentioned in medical books: a kohl recipe is recommended for hot and burning sensation in the eye (with gum arabic, saffron; T-S K25.83r), and as a simple in lexica of *materia medica* (T-S NS 224.65r; T-S Ar.39.184). Cannabis seeds were part of a recipe to treat hallucination (T-S 16.291v).<sup>376</sup>

**OMU:** al-Kindī describes the use of the plant in preparing a medication against insanity and to treat epilepsy.<sup>377</sup> al-Bīrūnī refers to the toxicity of the plant and the dangers inherent in its use.<sup>378</sup> Maimonides cites al-Tamīmī, the Jerusalem physician, who describes the oil and its ability to cure earache and to open obstructions in the ear. It was considered a hot and dry drug. Elsewhere, Maimonides mentions the ‘seed of the roasted desert kanbas—as a component in a preparation to induce hair growth in the armpits and pubes.’<sup>379</sup> Ibn al-Bayṭār gives his personal testimony

<sup>371</sup> Description: Zohary, p. 335.

<sup>372</sup> Additional names in Maimonides, Glossaire, nos. 58, 348; Issa, p. 38, no. 7; al-Antaki, p. 264.

<sup>373</sup> Chevallier, p. 180.

<sup>374</sup> Meshullam, p. 108; Rosenthal, Hashish, pp. 41–55. On the plant and its uses during the Middle Ages see Amar, Hashish.

<sup>375</sup> Dioscorides, III.165.

<sup>376</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>377</sup> al-Kindi, no. 205. Cf. Ibn Sina, p. 273.

<sup>378</sup> al-Biruni, II, pp. 53–54.

<sup>379</sup> Maimonides, Aphorisms, 21:69; 22:58; Maimonides, Sexual, 15.

that Indian cannabis was planted in Egyptian gardens and was called 'ḥashīsha'. In his view, taking one or two drams of it causes intoxication, and a high dosage can bring one to the edge of insanity and even cause death. He also notes that this plant was used extensively by fakirs, who swallowed it or chewed the leaves, sometimes with sugar and sesame seeds.<sup>380</sup> al-Qazwīnī relates that the plant 'confused the mind, made one intoxicated, and caused insanity'. The plant also served as a soporific, stopped haemorrhages, and soothed pains, including those of the joint infections (by means of an ointment or potion). The seeds or plant extract soothed eye pains. Al-Qazwīnī cites Ibn Sīnā who notes that the plant causes headaches and 'darkens' the sight. Others are quoted as describing uses such as dispelling bad odours and relieving earache.<sup>381</sup>

**TM:** The plant's inflorescence served as the basis for producing marijuana, an illegal substance used for smoking throughout the world, mainly in Asia and Africa. Criminals drugged their victims with it. Smoking it harms both body and mind.<sup>382</sup> The influence of its use on modern society is negative, and is frequently researched. These studies prove that even during the Middle Ages rulers strongly objected to the use of this drug because of its intoxicating effect and its negative social influence.<sup>383</sup>

**TAI:** Cannabis is mentioned in several Genizah fragments,<sup>384</sup> as well as materials woven from hemp which were used for rope production.<sup>385</sup>

## Caracal

*Felis [Lynx] caracal* (Felidae), **A:** 'anāq, 'anāq al-'ard<sup>386</sup>

**D&H:** Big desert cat (male length 80 cm). Its body is brownish-reddish yellow, and it has a long black forelock. Lives wild in Africa and parts of Asia.<sup>387</sup>

**PU:** Caracal is mentioned in a letter requesting the purchase of medicinal items (T-S NS 305.45).

<sup>380</sup> Ibn al-Baytar, al-Jami, IV, p. 39; Leclerc, No 1847.

<sup>381</sup> al-Qazwīnī, p. 257.

<sup>382</sup> Uphof, p. 103.

<sup>383</sup> Rosenthal, Hashish, pp. 101–159; Amar, Hashish, pp. 278–280.

<sup>384</sup> Goitein, Society, I, p. 86; Gil, Kingdom, IV, p. 334, no. 706.

<sup>385</sup> Goitein, Society, I, pp. 105–106.

<sup>386</sup> Ma'luf, p. 157.

<sup>387</sup> Plants & Animals, VII, pp. 219–220.

**TU:** Caracal also appears in an unidentified medical book on palsy (T-S NS 306.25).<sup>388</sup>

**OMU:** Caracal has an entry in the encyclopaedia of al-Qazwīnī (13th century).<sup>389</sup>

## Caraway

*Carum carvi* (Apiaceae), **A:** karāwya, karawyā<sup>390</sup>

**D&H:** Aromatic annual (60 cm), with ridge stem, feathery leaves and umbels white flowers in midsummer. Exploding capsules contain two small narrow seeds.<sup>391</sup> A few varieties of caraway besides the above-mentioned have been used, for example, *Bunium paucifolium*<sup>392</sup> in the ancient world as spice and incense plants. According to Dioscorides, *Kaeos* is a plant with seeds used to treat the stomach and in a medication against bites and stings. Its root was used as food.<sup>393</sup> Certain researchers identify 'karbas' that appears in the Mishna with a species of caraway (Kilayim, 2:5). One of the caraway species is mentioned in the Talmud as a medicine for the stomach (Bab. Talmud, Aboda Zara, 29a). The cultivated caraway (*Carum carvi*) is known also as 'Kümmel'.

**PU:** Caraway figures in 3 lists of *materia medica* (T-S Ar.39.307; T-S Ar.43.317; T-S NS 164.12) and 2 prescriptions for unknown uses (T-S Ar.40.141; T-S Ar.43.338).

**TU:** Caraway is also mentioned in medical books: in recipes for the treatment of excessive moisture in the body (caraway drink; T-S AS 179.305), in a lexicon of *materia medica* (T-S AS 182.222); also caraway seeds (T-S NS 164.12) and caraway water appears in another lexicon of *materia medica* (T-S Ar.41.37). Caraway is mentioned in recipes for unknown uses (T-S Ar.34.217; T-S Ar.41.90; T-S AS 170.136; T-S AS 177.31; Or.1081.1.66v) and in a recipe named violet tablets (*ḥabb al banafsaj*; T-S Ar.40.130).<sup>394</sup>

**OMU:** According to Maimonides, the plant is a hot and dry drug, used to treat headaches.<sup>395</sup> Ibn al-Bayṭār describes medical uses of the caraway,

<sup>388</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>389</sup> al-Qazwīnī, p. 349.

<sup>390</sup> Issa, p. 41, no. 2.

<sup>391</sup> Chevallier, p. 182.

<sup>392</sup> Feinbrun-Dothan, p. 482.

<sup>393</sup> Dioscorides, III.66.

<sup>394</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>395</sup> Maimonides, Aphorisms, 9:21; 21:80.

for example, to treat smallpox, kidney stones, and stomach worms. The root of the plant was considered a hot and dry substance.<sup>396</sup> Dāwud al-Anṭākī states that it is a hot and dry plant that removes stones from the kidneys, reduces swellings, induces sleep, and causes drugging.<sup>397</sup>

**TM:** In Iraq the cultivated caraway, which was considered a stimulant, was used to energize the digestive system, to relieve stomach pains, to dispel gases, to soothe headaches, and to cause diarrhoea.<sup>398</sup> The Jews of Iraq used it to stop hiccups.<sup>399</sup> In other countries the plant also served as diuretic.<sup>400</sup> Other species of caraway were likewise used for curative purposes.

**TAI:** According to 11th-century merchants' letters found in the Genizah, caraway was traded in Alexandria, Cairo, Qayrawān, and Palermo.<sup>401</sup>

## Carob

*Ceratonia siliqua* (Caesalpiniaceae), **A:** **khurnūb**<sup>402</sup>

**D&H:** Evergreen tree (10 m), compound leaves, green flowers, and large violet-brown fruits.<sup>403</sup> The carob tree has been used for curative purposes since early times. Galen describes its use to cause diarrhoea; Dioscorides notes that this occurs when it is taken before ripening, but after ripening it causes constipation.<sup>404</sup>

**PU:** Carob figures in a list of *materia medica* (T-S NS 325.127) and in a prescription (T-S AS 152.90).

**TU:** Carob is also mentioned in medical books in a recipe for emmenagogues and abortifacients (T-S Ar.45.30), in a lexicon of *materia medica* (T-S Ar.44.182; T-S Ar.40.45), and in another fragment (T-S Or. 13.12).<sup>405</sup>

**OMU:** A few medieval sources, mainly from the time of Muslim rule, mention the special quality of the Syrian carob.<sup>406</sup> Ibn Waḥshiyya notes

<sup>396</sup> Ibn al-Baytar, al-Jami, I, p. 5; Leclerc, no. 3.

<sup>397</sup> al-Antakī, p. 112.

<sup>398</sup> al-Rawi & Chaakravarty, p. 23, with content of active substances.

<sup>399</sup> Ben-Yakov, p. 303.

<sup>400</sup> Uphof, p. 109; Grieve, p. 158. Medical uses of the cultivated caraway among Jewish communities and folklore in Krispil, pp. 490–492.

<sup>401</sup> Gil, Kingdom, II, p. 514, no. 176; Goitein, Scoiety, I, p. 199, Ben-Sasson, p. 213, no. 52.

<sup>402</sup> Maimonides, Glossaire, No. 392.

<sup>403</sup> Chevallier, p. 184.

<sup>404</sup> Dioscorides, I.158.

<sup>405</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>406</sup> Amar, Production, pp. 202–205.



that it is used to stop diarrhoea and relieve nausea.<sup>407</sup> Ibn al-Bayṭār cites al-Tamīmī who describes various carob species from which ‘*rubb al-khurnūb*’ (carob jam) is made in the al-Shām region.<sup>408</sup> Dāwud al-Anṭākī reports that carob is used to treat fractures, to increase urination, to cure coughs and chest diseases, to strengthen the stomach, to reduce swellings, to stop bleeding, to prevent sores on the buttocks, to increase sexual desire, to fatten, and to curl the hair.<sup>409</sup>

**TM:** The Arabs of Israel and the Sinai Bedouin used carob honey to cure wounds of the tongue and to counteract tongue burns; they took carob juice to cure diabetes, stomach pains, and severe cough, and to remove phlegm.<sup>410</sup> The Jews of Iraq used the carob to treat haemorrhoids, to stop diarrhoea, and to regulate urination.<sup>411</sup> The carob is known in the Middle East for its ability to prevent the collapse of the womb, to repress menstruation, and to strengthen the stomach. In India the fruit was used to prevent bleeding and to cure cough; in North Africa it was taken to prevent diarrhoea and to increase urination, and in Europe to refine the voice and to cause diarrhoea.<sup>412</sup>

**TAI:** al-Muqaddasī states that Ramlah was the centre for carob exports. Among the agricultural products he also mentions ‘*kabīṭ*’ (a sweet made of carob).<sup>413</sup> It was widely cultivated in al-Shām and exported to different countries.<sup>414</sup> According to Genizah fragments, carob was greatly used for food and medicine, and therefore traded in the Mediterranean region in places such as Tyre, Cairo, Alexandria, North Africa, and Sicily.<sup>415</sup>

<sup>407</sup> Ibn Waḥshīyya, I, 184.

<sup>408</sup> Ibn al-Baytar, al-Jami, II, p. 51; Leclerc, nos. 762, 764. In connection with the jam and honey produced from the carob, see also al-Tamimi, p. 137b; al-Idrisi, p. 371; al-Dimashqī, pp. 200, 211; al-Nuwayri, p. 260; Ashtor, Trade, p. 290; Suriano, p. 40; Ibn Battuta, pp. 128–129.

<sup>409</sup> al-Antaki, p. 137; Duval, pp. 128, 771–772, 1780.

<sup>410</sup> Palevitch et al., p. 79; Levey, Beduins, p. 79.

<sup>411</sup> Ben-Yakov, pp. 204, 310, 331.

<sup>412</sup> Collected references in Palevitch et al., p. 80; Grieve, p. 451; Chopra et al., p. 77.

<sup>413</sup> al-Muqaddasi, pp. 180, 181.

<sup>414</sup> Amar, Production, pp. 202–205.

<sup>415</sup> Gil, Kingdom, II, p. 849, no. 283, III, p. 649, no. 493, p. 995, no. 602; Goitein, Society, I, p. 121, Ben-Sasson, p. 329, no. 83.

## Castor oil

*Ricinus communis* (Euphorbiaceae), **A: khirwa**<sup>416c</sup>

**D&H:** Evergreen shrub (10 m), with large palm-shaped leaves, green female flowers, and prickly red seed capsules.<sup>417</sup> Seeds of the castor oil plant have been found in the graves of Egyptian pharaohs, and the plant is also mentioned in the Ebers Papyrus. The oil of the plant has served as a purgative from the ancient Egyptian period to the present day.<sup>418</sup> The castor oil plant is mentioned in the Bible in the story of Jonah (Jonah 4:6–11). The Mishna mentions the term ‘shemen kik’ as an oil for lighting the Sabbath lamps (Shabbat, 2:1), while the Babylonian and Jerusalem Talmuds contain divided opinions as to its identity as cotton seed oil or as castor oil (Bab. Talmud, Shabbat, 21a). Dioscorides notes that the plant *Kroton e kiki* was not good for eating, but could be used for lighting, to cause diarrhoea, to induce vomiting, and to treat overflow of breast milk, intestinal problems, eye infections, and sunburn.<sup>419</sup> The oil produced from the seeds (‘kikinon elaion’) served among other things to treat infections, to eliminate worms, and to prepare plasters.<sup>420</sup>

**PU:** Castor oil figures in a list of *materia medica* (T-S AS 184.34) and in a prescription (T-S NS 306.134).

**TU:** Castor oil is also mentioned in medical books in a recipe for skin application (with wax and olive oil; T-S AS 180.162) and as treatment of convulsion and tetany, fevers, and colic (T-S Ar.40.162), and it is recommended as purgative (T-S Ar.41.4).<sup>421</sup>

**OMU:** The physician Assaf describes the castor oil plant, and lists its medical uses, for example, strengthening the intestines, treating bites and stings, side pains, spleen, liver and kidneys, toothache, malaria, dysentery, lung diseases, thigh sinew, cough, and the heart.<sup>422</sup> Castor oil was used to treat burns on the limbs and partial paralysis of the body, and was effective in opening obstructions in the urinary tract.<sup>423</sup> al-Kindi

<sup>416</sup> Maimonides, Glossaire, no. 396; Issa, p. 156, no. 17; Dinsmore & Dalman, no. 1570.

<sup>417</sup> Chevallier, p. 260.

<sup>418</sup> Palevitch, Plants, p. 267; Plants & Animals, X, pp. 204–205; Morton, pp. 193–194. On the history of the plant: Jacob, Ricinus.

<sup>419</sup> Dioscorides, IV.164.

<sup>420</sup> Ibid., I.38.

<sup>421</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>422</sup> Assaph, IV, 412.

<sup>423</sup> Ibid., 398.

relates of the use of the plant's leaves to treat epilepsy, in a preparation to lengthen the hair, and in an enema.<sup>424</sup> Maimonides reports the use of the seed in preparing a medication against poisoning.<sup>425</sup> Ibn al-Bayṭār cites Dioscorides and Galen with great precision and notes that Arab physicians such as al-Dimashqī, al-Rāzī, and al-Idrīsī maintained that it was a hot drug used to clean the intestines and the muscles, and to treat exhaustion, cold, paralysis, hardened skin, joint pains, and constipation.<sup>426</sup> According to Dāwud al-Anṭākī, castor oil plant serves to cure headache, partial paralysis, and excessive sweating, to cleanse the intestines, and to accelerate menstruation. The oil softened hard skin and lessened sexual desire.<sup>427</sup> He also describes the production of medical soap from castor oil.<sup>428</sup>

**TM:** Castor oil, which is found in the seeds at a concentration of 40% to 50%, serves among Arab and Jewish communities as a purgative.<sup>429</sup> Yemenite Jews used the castor oil plant to open closed wounds, to prepare an ointment for soothing and to treat insanity. The oil was taken against constipation, stomach pains, and earache.<sup>430</sup> The Jews of Iraq used the leaves internally to cure infertility and headache.<sup>431</sup> In Persia and Iraq the plant was used for lighting and was considered a purgative, a lubrication substance, and a base for ointments.<sup>432</sup>

## Celadine

Swallow-wort, *Chelidonium majus* (Papaveraceae), **A:** *māmīrān*<sup>433</sup>

**D&H:** Tall plant (up to 90 cm), serrated leaves, each flower having four petals. Grows wild in Europe, North Africa, and West Asia. Dioscorides describes two kinds and their medical uses, such as the seeds' juice as a cure for eye ailments and the roots for toothache.<sup>434</sup>

<sup>424</sup> al-Kindi, nos. 140, 143, 146. Compare al-Biruni, I, p. 142.

<sup>425</sup> Maimonides, Poisons, p. 147.

<sup>426</sup> Ibn al-Baytar, al-Jami, II, p. 53; Leclerc, no. 711. Similar uses Ibn al-Baytar, al-Jami, II, p. 111.

<sup>427</sup> al-Antaki, pp. 221–222.

<sup>428</sup> Ibid.

<sup>429</sup> Lev, Materials, pp. 237–238.

<sup>430</sup> Reiani, no. 104.

<sup>431</sup> Ben-Yakov, pp. 261, 368.

<sup>432</sup> al-Rawi & Chaakravarty, p. 82, with content of active substances; Hooper, pp. 164–165. Cf. Grieve, pp. 169–173.

<sup>433</sup> Issa, p. 47, no. 1; Maimonides, Glossaire, no. 241.

<sup>434</sup> Dioscorides, II.211–212.

**PU:** Celadine features in 2 prescriptions—for dental and oral hygiene (T-S AS 182.77) and for unknown uses (T-S NS 297.17)—and in a list of *materia medica* (T-S NS 321.49).

**TU:** Celadine is also mentioned in medical books (T-S Ar.40.104; T-S Ar.43.98; T-S Ar.43.180), and especially those dealing with eye disease (T-S Ar.43.76; T-S Ar.43.101; T-S Ar.43.166; T-S Ar.45.41) and in other fragments (T-S Ar.38.9; T-S Ar.38.124; T-S NS 297.11).<sup>435</sup>

**OMU:** al-Kindī writes that celadine is used to treat eye diseases.<sup>436</sup> R. Nathan ben Yoel Falaquera recommends the use of the plant for toothache and eye diseases, and as a diuretic.<sup>437</sup>

**TAI:** Diverse evidence found in legal documents shows that it was traded in the Maghreb, in Alexandria, and in Cairo.<sup>438</sup>

## Centaury

*Centaurea* sp. (Asteraceae), **A:** **qantūryūn**<sup>439</sup>

**D&H:** A botanical genus of 600 species, some spiny, that grow mainly in the northern hemisphere. Several species were used for medicinal purposes; Maimonides mentions two.<sup>440</sup> It was used in the Old World for the treatment of blisters, retention, strangury, and ulcers. Dioscorides regards the great centuary effective for convulsions, pleurisy, dyspnoea, spitting blood, expelling menstrual blood, and inflammation. The small kind is good for bruises, inflammation, strangury, calculus problems, and women's diseases.<sup>441</sup>

**PU:** Centaury features in a prescription for unknown uses (T-S AS 155.365).

**TU:** Centaury is also mentioned in medical books (T-S Ar.40.104; T-S Ar.43.138; T-S Ar.44.91) on ophthalmology (T-S Ar.41.24), on *materia medica* (T-S Ar.40.60), in pharmacopoeias (T-S Ar.44.193; T-S AS 179.110), in recipes for general tonic (T-S Ar.43.320), some for unknown uses (T-S AS 177.417), in a recipe notebook (T-S Ar.39.157 [pains in the joints]), and in other fragments (T-S NS 164.132; T-S NS 297.11;

<sup>435</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>436</sup> al-Kindi, p. 332, no. 280.

<sup>437</sup> Amar & Buchman, p. 212.

<sup>438</sup> Gil, Kingdom, III, p. 54, no. 319, IV, p. 165, no. 653.

<sup>439</sup> Issa, p. 44, nos. 10–16, p. 45, no. 1–10; Maimonides, Glossaire, no. 333.

<sup>440</sup> Maimonides, Glossaire, no. 333.

<sup>441</sup> Dioscorides, III.8–9.

T-S NS 297.39; T-S NS 297.114; T-S NS 297.115; T-S NS 297.120; T-S Or.1080.13.12).<sup>442</sup>

**OMU:** al-Kindī writes that centaury is employed in the preparation of clysters and for sciatica, lameness, backache, and general rheumatic pains.<sup>443</sup> R. Nathan ben Yoel Falaquera recommends the use of the plant as a diuretic, for the treatment of internal diseases (liver, stomach), for pains in the womb, and for spitting blood.<sup>444</sup>

## Chamomile

*Matricaria aurea* (Asteraceae), **A: bābūnaj**<sup>445</sup>

**D&H:** Mat-forming evergreen perennial (45 cm) with aromatic very finely divided leaves, long-stalked, solitary flowers with yellow discs and creamy-white ray florets.<sup>446</sup> Ancient Egyptians used the plant in cultic ceremonies and to cure malaria. For the Romans it was a protection against snakebites. Dioscorides describes the species of *Anthemis* and notes their medical uses: to accelerate menstruation, to abort foetuses, to dissolve stones in the urinary tract, to increase urination, to cure infections, and to reduce fever.<sup>447</sup>

**PU:** Chamomile liquid feautres in a prescription for unknown uses (T-S Ar.41.125).

**TU:** Chamomile is also mentioned in medical books: in recipes, one [citing Galen] for skin lotions and poultices to heal pustules and remove scabs (T-S Ar.42.22) and another to treat hair splitting and falling out (applying ointment after shaving; T-S NS 222.28r) and eye complaints (T-S AS 144.224). Chamomile and organum constituted a draught for unknown uses (T-S AS 87.88). On particular fragment, part of a tabulated work on medicine which includes general management of fevers, cancer, erysipelas, soft and hard inflammatory swellings, and elephantiasis, was found (T-S Ar.41.137). Chamomile oil is mentioned in advice

<sup>442</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>443</sup> al-Kindi, p. 319, no. 241.

<sup>444</sup> Amar & Buchman, p. 238.

<sup>445</sup> Maimonides, Glossaire, no. 20; Leclerc, nos. 121, 220, 365, 889, 1307, 1767; Dinsmore & Dalman, nos. 932–942; Issa, p. 17, no. 18; *Ibid.*, p. 18, no. 108.

<sup>446</sup> Bown, p. 105.

<sup>447</sup> Dioscorides, III.154.

to a patient: to anoint himself along with nard (T-S AS 166.208r). It is also mentioned in a recipe for unknown uses (T-S AS 162.69).<sup>448</sup>

**OMU:** According to the physician Assaf, chamomile serves to cure eye diseases.<sup>449</sup> al-Kindī describes the use of the plant in treating haemorrhoids, in settling the liver and stomach, strengthening the limbs, and soothing skin irritations.<sup>450</sup> According to Maimonides, 'kamomil' is an example of a medicine that heats and dries, widens orifices, permeates the skin, and cures the limbs.<sup>451</sup> Ibn al-Bayṭār states that different varieties of the plant serve to eliminate stones in the urinary tract, treat the gall bladder, strengthen the womb, reduce swellings, accelerate menstruation, and increase urination and sweating.<sup>452</sup> Ibn al-Bayṭār also says that al-Tamīmī noted that it was used there to treat eye diseases.<sup>453</sup> According to the scholar al-Ghazzī the plant serves in the treatment of toothache and headaches, and causes vomiting.<sup>454</sup>

**TM:** The Arabs of Israel use the dried flowers to cure joint diseases and the digestive system, and to reduce high fever. Yemenite Jews used the inflorescence to rinse the mouth, to reduce swellings, to treat infections in the kidneys and liver, to soothe the nerves, to strengthen the mind, to treat headaches, dizziness, and chronic diseases. Moroccan Jews used the plant to reduce high fever, to treat cough and stomachaches, and to increase female fertility. Libyan Jews used it to increase sweating and to treat colds, while Persian Jews took it as a carminative. Tunisian and Algerian Jews, on the other hand, used it to treat stomach worms and stomach problems, spasms, and colds, and to accelerate menstruation. . .<sup>455</sup>

**TAI:** Chamomile is mentioned as medicinal plant bought in Cairo.<sup>456</sup>

<sup>448</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>449</sup> Assaf, IV, 401.

<sup>450</sup> al-Kindī, nos. 6, 8, 32, 36, 37, 47, 51, 55, 60.

<sup>451</sup> Maimonides, Aphorisms, 23:99.

<sup>452</sup> Ibn al-Baytar, al-Jami, I, pp. 48–49; Leclerc, no. 121. See also Ibn al-Baytar, al-Jami, II, p. 99; Leclerc, no. 889.

<sup>453</sup> Ibn al-Baytar, al-Jami, I, p. 121; Leclerc, no. 365.

<sup>454</sup> Hamarneh, Plants, p. 239.

<sup>455</sup> Grieve, pp. 185–187; Uphof, p. 40; al-Rawi & Chaakravarty, p. 14, with content of active substances.

<sup>456</sup> Dietrich, Egypt; Gil, Kingdom, II, p. 676, no. 231.

## Chickpea

*Cicer arietinum* (Fabaceae),<sup>457</sup> **A:** *ḥimmiṣ*, *ḥummuṣ*

**D&H:** Edible annual pulse which originated in the Mediterranean region. The leaves are leathery, the flowers are red or white, and the pods are hairy and contain two big seeds.<sup>458</sup> Some scholars identify the chickpeas with the biblical *ḥamiṣ*.<sup>459</sup> Dioscorides employed chickpeas for the stomach, to expel the menses and the embryo, to treat inflammations, running ulcers of the head, jaundice, and dropsy.<sup>460</sup>

**PU:** Chickpea appears in a list of *materia medica* (T-S NS 306.115) and in a prescription for general health with topical application (T-S Ar.35.363).

**TU:** Chickpea also features in medical books (T-S Ar.40.66; T-S Ar.40.194 [diet for weight increase]; T-S Ar.41.96; T-S Ar.43.252) on dermatology (T-S Ar.43.324; T-S NS 90.60), on sex (T-S Ar.44.79), on of *materia medica* (T-S Ar.45.51; T-S Ar.42.73; T-S Ar.44.76; T-S Ar.44.90; T-S AS 178.81), in pharmacopoeias (T-S Ar.40.91; T-S Ar.40.180; T-S Ar.41.96; T-S NS 305.107), in quasi-medicine (T-S NS 222.41), in recipes, some for unknown uses (T-S AS 166.208; T-S Ar.44.182), and in other fragments (T-S Or.1080.13.12).<sup>461</sup>

**OMU:** al-Kindī writes that chickpea was used to treat skin diseases, sore joints, rheumatism, and in certain electuaries.<sup>462</sup> R. Nathan ben Yoel Falaquera recommends the use of the plant as a diuretic, to kill intestinal worms, to treat of internal diseases, and to open obstructions of the liver and spleen.<sup>463</sup>

**TM:** Yemenite Jews used the seeds to cure wounds, earache, backache, gum swellings, and intestinal problems. Chickpea was also used as a diuretic and to treat kidneys stones.<sup>464</sup> In traditional medicine in Israel the seeds are used for the treatment of diseases of the stomach and as a carminative.<sup>465</sup>

<sup>457</sup> Issa, p. 48, no. 10.

<sup>458</sup> Plants & Animals, XII, pp. 27–28.

<sup>459</sup> Felix, World, p. 162.

<sup>460</sup> Dioscorides, II.126.

<sup>461</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>462</sup> al-Kindī, pp. 260–261, no. 82.

<sup>463</sup> Amar & Buchman, p. 112.

<sup>464</sup> Reġiani, p. 15, no. 24.

<sup>465</sup> Lev & Amar, Ethnic, p. 110.

**TAI:** Chickpea was among the legumes consumed in medieval Egypt, mainly as food, according to Genizah documents.<sup>466</sup>

### Chickling vetch

Bitter vetch, *Lathyrus sativus* (Fabaceae), **A:** *julubbān*<sup>467</sup>

**D&H:** Annual plant (up to 75 cm), its leaflets are ruler shaped and it has long tendrils. The flower is white and flat (2.5–4 cm). The seeds are white and edible.

**PU:** Chickling vetch figures in a list of *materia medica* (T-S Ar.39.450) and in a prescription for unknown uses (T-S NS 297.216).

**TU:** Chickling vetch is also mentioned in medical books: as ingredient in a recipe for collyria (T-S Ar.44.30), in lexica of *materia medica* (T-S Ar.41.37; T-S NS 222.21), and in a notebook of quasi-medicine (T-S Ar.41.139).<sup>468</sup>

**OMU:** R. Nathan ben Yoel Falaquera (13th century) describes the seeds as having cold and dry characters; it is bad for the health unless eaten with fat meat.<sup>469</sup>

**TAI:** Chickling vetch is among the legumes cultivated in the medieval Levant.<sup>470</sup> One Genizah fragment tells of a batch of chickling vetch seeds imported to Alexandria.<sup>471</sup>

### Christ's thorn jujube

*Ziziphus spina-christi* (Rhamnaceae),<sup>472</sup> **A:** *sidr, nabaq*<sup>473</sup>

**D&H:** Deciduous spiny tree (10 m) of Sudanese origin, with oval-shaped leaves and yellow-green flowers that bear edible yellow-brown fruits.<sup>474</sup> In Christian tradition the tree is identified with the thorn bush from which Jesus's head was crowned before his crucifixion (Matthew

<sup>466</sup> Goitein, Society, IV, pp. 232, 245.

<sup>467</sup> Issa, p. 105, nos. 6, 9, 12.

<sup>468</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>469</sup> Amar & Buchman, p. 140.

<sup>470</sup> Amar, Production, pp. 96–97.

<sup>471</sup> Goitein, Society, IV, p. 433.

<sup>472</sup> Issa, p. 192, no. 8.

<sup>473</sup> Maimonides, Glossaire, no. 269; Dinsmore & Dalman, no. 395; Issa, p. 192, no. 8; Crowfoot & Baldensperger, pp. 107, 112.

<sup>474</sup> Plants & Animals, X, pp. 219–220.



27:28–29). In the past various species of jujube grew in the Middle East that bore excellent fruit. In medieval literature the jujube features frequently under various names.<sup>475</sup>

**PU:** Christ's thorn jujube is found in 2 prescriptions: for a potion (T-S AS 150.59) and a cough (T-S 8J15.20).

**TU:** Christ's thorn jujube is also mentioned in books: recipe booklets (unknown uses; T-S Ar.44.187; T-S Ar.45.33) and in pharmacopoeias (T-S Ar.44.205; T-S Ar.44.218; T-S Or.1080.3.39).<sup>476</sup>

**OMU:** The physician Assaf states: "They are a species of thorn that strengthens the stomach and the blood... and increases phlegm."<sup>477</sup> Maimonides reports that it is used to treat the stings of bees or wasps.<sup>478</sup> al-Qazwīnī describes the use of the leaves to wash the head in order to strengthen and lengthen the hair, and to prevent it from falling out. In his opinion, the fruit served to stop haemorrhages and diarrhoea.<sup>479</sup>

**TM:** The Arabs of Israel made use of the various parts of the tree. The fruit kernels are used to treat eye infections, stomach-aches, and constipation, and to eliminate stomach worms. The fruit was used to treat caries, toothache, gum problems, and open wounds. The roots were used to treat caries, toothache, gum problems, joint pains, backaches and body pains. The leaves were used to treat stomach-ache, constipation, and heartburn, and also to lave the dead. The branches served in a preparation against hair loss.<sup>480</sup> The Sinai and Negev Bedouin apply the different parts of the tree to treat muscle pains, heart pains, and diarrhoea, to increase breast milk, and to assist women to become pregnant.<sup>481</sup> Among the Jews of Iraq the fruit served as a component in medications to treat lung infections, burns, wounds, and diarrhoea, and also to eliminate worms. The leaves were used to cure skin diseases and haemorrhoids.<sup>482</sup> Yemenite Jews used the jujube leaves to soothe pains, to cleanse the blood, and to treat diarrhoea with blood and haemorrhoids.<sup>483</sup> In Iraq the fruit served to soothe chest pains and to cleanse the

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<sup>475</sup> Kohen, al-Attar, p. 247; Estori ha-Parhi, p. 526; Maimonides, Glossaire, no. 269; Dafni et al.

<sup>476</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>477</sup> Assaph, IV, 38.

<sup>478</sup> Maimonides, Poisons, p. 125.

<sup>479</sup> al-Qazwīnī, p. 235. Cf. Ibn al-Baytar, al-Jami, III, pp. 4–5; Leclerc, no. 1164; Ibn Sina, p. 377.

<sup>480</sup> Palevitch et al., p. 159.

<sup>481</sup> Levey, Bedouins, p. 84; Abu-Rabia, p. 21.

<sup>482</sup> Ben-Yakov, pp. 121, 164, 205, 213, 266, 311.

<sup>483</sup> Reiani, no. 136.

blood, and as a purgative, a softener, and a purifier. The bark of the tree are used to clean the teeth, to soothe toothache, and to strengthen the gums, and the leaves and bark are an astringent that cools, strengthens, and relieves stomachaches.<sup>484</sup>

## Cinnabar

HgS,<sup>485</sup> **A:** *zanjafr, zanḥafar*<sup>486</sup>

**D&H:** Sulphur of mercury, red mineral, main source for the production of mercury.

**PU:** Cinnabar appears in a list of *materia medica* (T-S Ar.39.487).

**TU:** Cinnabar is also mentioned in a pharmacopoeia (T-S Ar.11.31), in quasi-medical literature (T-S Ar.44.4), and in another fragment (T-S Ar.43.312).<sup>487</sup>

**OMU:** Ibn al-Bayṭār recommends the use of cinnabar for the treatment of wounds, abscesses and burns, to form scabs and to prevent caries.<sup>488</sup>

**TAI:** Cinnabar was imported from Sicily to Egypt and is mentioned as traded in Tripoli and Cairo as well.<sup>489</sup>

## Coconut palm

*Cocos nucifera* (Cocaceae) **A:** *jawza hindiyya, nārjīl*<sup>490</sup>

**D&H:** Tall tropical tree (30 m), with long feathery leaves that concentrate at the top of the trunk; the fruit is oval, big (10–15 cm), and contains potable juice and copra.<sup>491</sup> The origin of the coconut palm is apparently in the Malayan islands. In India the tree is mentioned as early as the 5th century BCE. It is known that the tree grew in Sri Lanka (Ceylon) in the 1st century BCE and was an agricultural crop in India in the 6th

<sup>484</sup> More on the use of jujube species in the framework of traditional medicine among the inhabitants of neighboring countries and in the East is in Palevitch et al., pp. 160–161; Ashraf et al. On the same subject in Europe see Grieve, pp. 451–452.

<sup>485</sup> Hava, p. 297.

<sup>486</sup> Maimonides, Glossaire, no. 134.

<sup>487</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>488</sup> Ibn al-Bayṭār, al-Jami, II, p. 171.

<sup>489</sup> Gil, III, p. 201, no. 491; Gil, Kingdom, III, p. 129, no. 344.

<sup>490</sup> Maimonides, Glossaire, nos. 82, 101, 257; Issa, p. 53, no. 17; Leclerc, nos. 240, 540, 1022.

<sup>491</sup> Zohary, p. 590.

century CE and on the island of Java in the 8th century CE.<sup>492</sup> The tree spread around the world as an agricultural crop mainly during the early Islamic period.<sup>493</sup>

**PU:** Coconut fruit is found in a M.M. list (T-S Ar.30.274).

**TU:** Coconut is also mentioned in medical books, especially pharmacopoeias (T-S Ar.39.369; 41.123; T-S 44.218).<sup>494</sup>

**OMU:** Benevenutus notes in his book that the fruit of the coconut tree served as a component in a medication called the 'Jerusalem electuary' to treat cataract.<sup>495</sup>

According to Maimonides, the 'kernel of the Indian nut' was a component in a 'concoction that was very beneficial for coitus, increased semen, strengthened the kidneys, and added flesh.'<sup>496</sup> The fruit also served as a component in a medication to strengthen the penis and to constrict the glans.<sup>497</sup> It was defined by Maimonides as a moist and hot drug.<sup>498</sup> al-Qazwīnī notes its ability to 'increase semen and improve the ability to copulate' and he added that it was good for treating haemorrhoids.<sup>499</sup> Ibn al-Bayṭār relates that coconut oil served among other things to improve mental perception and to cure haemorrhoids.<sup>500</sup>

**TM:** Among the Jews of Iraq the 'jawz al-hindi' served as a component in a medication to improve the memory, and in another medication to treat skin diseases, to strengthen virility and the stomach, to increase the amount of semen, to induce urine flow and to cure backache.<sup>501</sup> The bark of the tree was used in various cultures as a toothpaste and a disinfectant, while the ash served to treat scabies. In India, the soft substance under the leaf was used to stop blood haemorrhages; in Java the roots were used to treat dysentery and intestinal diseases, while in Mexico coconut juice was taken as a diuretic and to eliminate worms.<sup>502</sup>

<sup>492</sup> Watson, p. 56; Chizik, p. 119.

<sup>493</sup> A detailed review of this spreading is in Watson, *Innovation*, pp. 55–57; Galil.

<sup>494</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>495</sup> Benevenutus, p. 37.

<sup>496</sup> Maimonides, *Sexual*, Introduction, 7.

<sup>497</sup> *Ibid.*, 8:11.

<sup>498</sup> Maimonides, *Aphorisms*, 21:77.

<sup>499</sup> al-Qazwīnī, p. 235; Ibn al-Baytar, *al-Jami*, IV, p. 174; Leclerc, no. 2214.

<sup>500</sup> Ibn al-Baytar, *al-Jami*, II, p. 112; Leclerc, no. 931.

<sup>501</sup> Ben-Yakov, pp. 146, 148, 157, 218, 312, 330, 349.

<sup>502</sup> Uphof, p. 141.

## Colocynth

Bitter gourd, bitter apple, *Citrullus colocynthis* (Cucurbitaceae), **A: ḥanzal**<sup>503</sup>

**D&H:** Colocynth is a perennial herbaceous plant that grows on sandy soil and in desert gorges. Its fruit is rounded, the size of an orange, and its taste is very bitter. This species grows mainly in the Arabia-Sahara region, and scholars believe that it might be the original species for the domesticated watermelon.<sup>504</sup> The special characteristics of the colocynth feature in the Bible (II Kings, 4:39–40). According to medieval Jewish commentators the plant was identified as Colocynth. Colocynth oil is mentioned in the Mishna as one of the oils that may be used for lighting the Sabbath eve candles. The medicinal uses of the plant were known at that time as well. Dioscorides describes the use of the *kolokunthis* pulp as a purgative, an expectorant, and an abortifacient, and to relieve toothache.<sup>505</sup>

**PU:** Colocynth is found in a list of *materia medica* (T-S Ar.39.451) and 3 prescriptions: a purgative (T-S Ar.39.458), a compound (T-S AS 177.417), and one written by Maimonides (T-S Ar.30.286).

**TU:** Colocynth is also mentioned in a lexicon of *materia medica* (T-S AS 179.308) and in medical books: colocynth roots soaked in opium or pure vinegar was a recipe for the treatment of diseases affecting the tongue that may cause suffocation (citing Galen), for a gargle for swollen throat, and to ease tooth extraction (T-S Ar.41.30). Pith of colocynth appears in a recipe for the treatment of joint pains (T-S Ar.39.157); in a chapter numbered 55 of a medical text on the preparation of a corpse (injections with borax; T-S NS 164.80); and in a prescription for convulsions and tetany, fever, and colic (T-S Ar.40.162). It is also mentioned in recipes for unknown uses (T-S Ar.41.90; T-S AS 181.23). Colocynth is one of the simples found in a quasi-medical formula for incense and protection from artful machinations (T-S NS 306.198v).<sup>506</sup>

**OMU:** Many medieval physicians inform us of the use of colocynth as a medication, mainly as a strong cathartic: al-Kindī, for example, describes extensive use of the plant as an ingredient of certain remedies for the

<sup>503</sup> Maimonides, Glossaire, p. 52, no. 158; Leclerc, nos. 1317, 1741; Issa, p. 50, no. 9.

<sup>504</sup> Plants & Animals, XII, pp. 121–122; Feinbrun-Dothan, p. 655.

<sup>505</sup> Dioscorides, IV.178.

<sup>506</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

treatment of itching and arthritis, to cure insanity, and as an expectorant.<sup>507</sup> Maimonides reports that its roots were a component of a 'very important' remedy for scorpion stings.<sup>508</sup> Ibn al-Bayṭār mentions different ways of collecting the plant and the medical applications of its fruit: to treat constipation, headache, toothache, muscle pains and spasms, epilepsy, lung disease, depression, and diseases of the kidney and the urinary tract. The leaves were used to stop haemorrhages, reduce swellings, and treat skin diseases such as boils and leprosy. The roots were used to treat scorpion stings and snakebites, and to increase the quantity of mother's milk.<sup>509</sup> al-Qazwīnī writes that its leaves cure haemorrhage, depression, and epilepsy. He adds that boiled in milk, the fruit acts as a purgative, and that the roots are used to treat the snakebites and scorpion stings. It was also used as a remedy for leprosy, arthritis and other diseases.<sup>510</sup> al-Qazwīnī reports that the water in which colocynth fruits were soaked was used to get rid of fleas.<sup>511</sup> Ibn al-Bayṭār cites Ibn 'Imrān that oil boiled with the peel of the colocynth fruit prevents hair from greying and dyes it black.<sup>512</sup>

**TM:** Traditional Arab medicine includes the use of colocynth fruit and seeds to treat diabetes, paralysis, face spasms, haemorrhoids, and arthritis, and pains of the stomach and heart.<sup>513</sup> The Sinai Bedouin used the plant as a purgative and to treat muscle pain and toothache.<sup>514</sup> Yeminite Jews used the fruits to treat stomach worms and jaundice.<sup>515</sup> The pulp of the colocynth was widely used in Europe, India, the Middle East, and North Africa to treat various symptoms and diseases such as warts, and internal cancers (leukaemia and breast cancer).<sup>516</sup> In many countries it is also used as a cathartic in modern medicine as well as traditional,<sup>517</sup> because the pulp contains many glycosides, which irritate the stomach and intestines and cause vomiting and diarrhoea. The seeds

<sup>507</sup> al-Kindi, no. 47, 138. Cf. Ibn Sina, pp. 316–317.

<sup>508</sup> Maimonides, Poisons, p. 118.

<sup>509</sup> Ibn al-Baytar, al-Jami, II, p. 36; Leclerc, no. 714. Cf. al-Biruni, I, pp. 131–132; II, pp. 89–90.

<sup>510</sup> al-Qazwīnī, p. 246.

<sup>511</sup> al-Qazwīnī, p. 246.

<sup>512</sup> Ibn al-Baytar, al-Jami, II, p. 116; Leclerc, no. 952; al-Antaki, p. 133.

<sup>513</sup> In detail in Palevitch et al., p. 17.

<sup>514</sup> Levey, Beduins, p. 75.

<sup>515</sup> Reiani, p. 16, no. 28.

<sup>516</sup> Hartwell, p. 94; Grieve, pp. 49–50.

<sup>517</sup> Uphof, p. 133; Hill, p. 259.

contain 17% oil, which is edible.<sup>518</sup> In some regions of the Middle East, colocynth seeds are still eaten by humans as well as animals.<sup>519</sup>

**TAI:** Abū al-Khayr al-Ishbīlī informs us in his entry ‘ḥanzal’ that some people think this is the ‘baṭṭikh al-filaṣṭīnī’ while other Andalusian contemporaries hold that ‘dalā’ is ‘baṭṭikh al-filaṣṭīnī’.<sup>520</sup> We may learn about the use and trade of the plant from an unusual historical source, that is, personal names. Examples are Maḥmūd b. Maḥmūd Abū al-Ṭīb al-Ḥanzalī (d. 948 CE), the ‘qāḍī’ (judge) of Ramlah, and the Jewish scholar Rabbi Yehoshua ben Yosef Ḥandali (17th century) from Safed, who also worked in Jerusalem.<sup>521</sup> Both were named after the colocynth plant. In an Italian ledger of the 14th century ‘coloquinta’ is listed among other commodities traded in Mediterranean ports.<sup>522</sup> We have evidence that Jewish citizens of Gaza in the 19th century bought quantities of colocynth fruits from the local Bedouins and distributed them throughout Europe for medicinal uses.<sup>523</sup> This fruit is still sold in Jerusalem and in other Mediterranean markets for traditional uses, but it is hardly used in modern medicine.

### Common caper

*Capparis spinosa* (Capparaceae), **A:** **kabar**<sup>524</sup>

**D&H:** Shrub (1 m), with spiny trailing stems, fleshy oval leaves. Green buds, large white flowers, and red berries in autumn.<sup>525</sup> In ancient Babylonia the plant was used to treat leg pains, poisonings, and difficulties in urination.<sup>526</sup> Dioscorides notes that the sour fruit and stems serve as food, and Pliny describes the cultivation of capers. Dioscorides describes the medical use of the roots of the *Kapparis* and of the fruit to ease toothache and treat the liver, the spleen, stomach ulcers, spasms, paralysis, and the thigh sinew, as well as to induce urination. The juice was

<sup>518</sup> On the contents of the substances in the various parts of the plant and their medicinal uses see in detail: Darwish-Said et al.; Hooper, p. 101.

<sup>519</sup> For example: Hooper, p. 101.

<sup>520</sup> al-Ashbili, p. 235.

<sup>521</sup> Amar, *Colocynthis*.

<sup>522</sup> Pegolotti; Heyd.

<sup>523</sup> Amar, *Colocynthis*.

<sup>524</sup> Maimonides, Glossaire, no. 197; Dinsmore & Dalman, no. 183; Issa, p. 38, no. 13.

<sup>525</sup> Chevallier, p. 180.

<sup>526</sup> al-Kindi, p. 322.

also used to eliminate worms in the ears.<sup>527</sup> The Talmud considers it a strong and steady plant (Bab. Talmud, Bezah, 25b), and a component in a medication of 'caper juice in vinegar' (Bab. Talmud, Shabbat, 110a).<sup>528</sup>

**PU:** Common caper is found in 2 prescriptions (T-S NS 305.76; T-S NS 83.28).

**TU:** Common caper is also mentioned also in medical books (T-S Ar.39.253; T-S Ar.40.5; T-S Ar.40.104; T-S Ar.43.98; T-S Ar.44.51), on dentistry (T-S Ar.42.39), on dermatology (T-S NS 90.60), on poisons (T-S Ar.41.116), on *materia medica* (T-S Ar.44.204), and in pharmacopoeias (T-S NS 222.69). It also appears in a recipe for treating itching and leucoderma (T-S Ar.39.234) and in other fragments (T-S Ar.38.40).<sup>529</sup>

**OMU:** The physician Assaf describes the use of its roots to treat all kinds of pains, women's afflictions, insanity, and worms in the ears.<sup>530</sup> Other uses are as a diuretic, to cure the kidneys and mouth sores, to treat rotting teeth and gums, scorpion stings, wounds and stomach problems, and also to accelerate menstruation.<sup>531</sup> al-Kindi lists various uses, among them the use of the root skins to bandage the spleen, to cure haemorrhoids, and to dispel bad odours.<sup>532</sup> Maimonides notes the use of caper roots to prepare a poultice to dress a hardened spleen, and to remove kidney stones. The plant was also used to stimulate the appetite, to cleanse and dry the stomach, to clean and open obstructions in the spleen and liver; it is listed with the hot and dry drugs.<sup>533</sup> According to Ibn al-Bayṭār, the caper is effective in treating the thigh sinew, but one should beware of prolonged treatment.<sup>534</sup>

**TM:** The Arabs of Israel used the root of the caper plant to treat hardness of hearing, rheumatism, infertility in men and women, and nerve illnesses, as well as to soothe pains. The flowers served to increase erection and to treat infertility in women; the leaves were applied to treat open wounds and pollution and to clear the respiratory tract, while the fruits were taken for treat cough and lung diseases.

<sup>527</sup> Dioscorides, II.204.

<sup>528</sup> On the history of the plant see also Krispil, pp. 1121–1142; Dafni, Edible, p. 103; Dafni, Mandrakes, p. 77.

<sup>529</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>530</sup> Assaph, IV, 403.

<sup>531</sup> Ibid., p. 391.

<sup>532</sup> al-Kindi, nos. 5, 207, 216. Cf. Ibn Sina, p. 343.

<sup>533</sup> Maimonides, Aphorisms, 9:77; 19:13; 21:37, 80.

<sup>534</sup> Ibn al-Baytar, al-Jami, IV, pp. 45–48; Leclerc, no. 1877.

## Common reed

*Phragmites australis* (= *P. communis*) (Poaceae), **A: qaṣab**<sup>535</sup>

**D&H:** Tall cereal plant that grows on river banks and has cosmopolitan distribution. The leaves are long; the canes are erect and flexible, and have a brush-like inflorescence on top.

**PU:** Common reed appears in 3 lists of *materia medica* (T-S Ar.39.450; T-S Ar.43.317; T-S NS 306.115), and its roots figure in a prescription for unknown uses (T-S Ar.41.81).

**TU:** Common reed is also mentioned in general medical books (T-S NS 306.93) and in pharmacopoeias (T-S Ar.45.19; T-S Or.1080.3.39).<sup>536</sup>

**OMU:** R. Nathan ben Yoel Falaquera recommends the use of the plant as a diuretic, and for the treatment of alopecia (peel and root), bites, and skin diseases (erysipelas).<sup>537</sup>

## Copper

**Cu, A: nuḥās muḥarraḡ, nukhās, zahr al-nuḥās**,<sup>538</sup> **fasqiyā**<sup>539</sup>

**D&H:** Reddish metal which is common in nature as a free poison or as ore. The production process is heating or toasting the ore and separating the slags. It was known in ancient Mesopotamia as an eye treatment and to 'eat off' dead flesh. Dioscorides states that burned copper was used to cicatrize ulcers, to cause vomiting, and as purgative.<sup>540</sup>

**PU:** Burned copper is found in one prescription (T-S Ar.38.29) and copper in another (T-S Ar.43.317).

**TU:** Copper is also mentioned in general medical books (T-S Ar.11.12; T-S Ar.11.31; T-S AS 180.201) and in others on ophthalmology (T-S Ar.41.24; T-S Ar.41.40; T-S Ar.42.144; T-S Ar.43.201; T-S Ar.44.13; T-S Ar.44.69), *materia medica* (T-S Ar.39.273 T-S Ar.39.478; T-S Ar.41.37), in pharmacopoeias (T-S Ar.39.302; T-S NS 90.28; T-S NS 182.298; T-S NS 183.144 T-S NS 222.67), and in quasi-medical and alchemical fragments (T-S K 25.83; T-S Ar.40.44; T-S Ar.43.281; 43.308; T-S Ar.44.45; T-S NS 31.6). Copper appears in alchemical formulae (T-S K 25.83v, T-S

<sup>535</sup> Issa, p. 138, no. 19.

<sup>536</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>537</sup> Amar & Buchman, p. 236.

<sup>538</sup> Maimonides, Glossaire, no. 142, 357.

<sup>539</sup> al-Tamimi, p. 114.

<sup>540</sup> Dioscorides, V.87.



Ar.11.12, T-S Ar.44.45, T-S AS 182.298); copper appears in a recipe for unknown uses (T-S AS 179.259). Burnt copper was used among other materials for dyeing hair black (T-S Ar.40.121) and in recipe for the treatment of eye complaints such as weakness and dimness of vision and drooping eyelids (T-S Ar.41.40).<sup>541</sup>

**OMU:** al-Kindī writes that burned copper was used to treat diverse eye diseases and skin itches.<sup>542</sup> R. Nathan ben Yoel Falaquera counsels caution in the use of copper as medicine, but also recommends it for the improvement of poor eyesight, dyeing the hair black, and draining yellow bile.<sup>543</sup>

**TAI:** Copper was a common commodity in the medieval period and was used in industry, tool production, and also medicine. It was exported to Egypt from the Maghreb and Sicily, and accordingly appears in many fragments, mainly traders' letters which refer to Palermo, Cairo, and Mahdiyya.<sup>544</sup>

### Cornelian cherry

Dog wood, *Cornus mas* (Cornaceae), **A:** **mū, qaraniyya**<sup>545</sup>

**D&H:** Deciduous tree (4 m), with glossy elliptical leaves and bright red oval berries.<sup>546</sup> According to Dioscorides, the fruit of the *Krania* was a purgative drug, and the leaves were a medicine for skin diseases.<sup>547</sup>

**PU:** Cornelian cherry appears in a list of *materia medica* (T-S Ar.51.53).

**TU:** Cornelian cherry is mentioned in a lexicon of *materia medica* (T-S Ar.44.204).<sup>548</sup>

**OMU:** According to Maimonides, cornelian cherry was a substitute for cinnamon in medications intended to liquefy phlegm, to counteract poisons and the venom of living creatures, to induce urine flow, and to generate heat.<sup>549</sup> Dāwud al-Anṭākī states that it was considered a hot and

<sup>541</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>542</sup> al-Kindī, pp. 339–340, no. 306.

<sup>543</sup> Amar & Buchman, p. 215.

<sup>544</sup> Goitein, Society, I, pp. 108, 154, 334, IV, pp. 131–135, Gil, Kingdom, I, pp. 360, 564, IV, p. 447, see Indices; Ben-Sasson, p. 83, no. 12, p. 263, no. 63.

<sup>545</sup> Maimonides, Glossaire, no. 231; Issa, p. 58, no. 7. An individual opinion regarding identification is in Chizik, p. 755.

<sup>546</sup> Chevallier, p. 193.

<sup>547</sup> Dioscorides, I.172.

<sup>548</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>549</sup> Maimonides, Aphorisms 21:42, 65. Cf. Ibn Sina, p. 361.

dry drug. Among its medical uses were stopping phlegm, neutralizing smell, refining the voice, softening stickiness, and soothing the stomach, liver, and kidneys. It was also a stimulant for sexual desire, cured infections in the urinary bladder, stopped sweating, and dispelled exhaustion and joint pains. The oil produced from it by cooking was effective in treating the shivers, paralysis of the body and face, coldness in the bones, and weakness.<sup>550</sup>

**TM:** In Turkey, the plant was used to produce red food colouring, the astringent fruit to treat cholera, and the flowers to cause diarrhoea.<sup>551</sup> It has also been recorded in the markets of modern Cairo.<sup>552</sup>

**TAI:** Ibn al-Bayṭār reports that 'it is a known mountain tree that is found only in the mountains of Lebanon.'<sup>553</sup> Dāwud al-Anṭākī notes that it grows in the cities of the al-Shām region.<sup>554</sup>

## Cotton

*Gossypium herbaceum* (Malvaceae) **A:** **quṭn**<sup>555</sup>

**D&H:** According to archaeological excavations, the cultivation of cotton began in Asia in the sixth millennium BCE.<sup>556</sup> In the Levant cotton is known since the Hellenistic period. In rabbinical writings cotton is called 'tzemer gefen' (Mishna, Kilayim, 7:2). It appears that cotton as an agricultural crop was slowly introduced into the Middle East during the Mishna and Talmud periods, but with the spread of Islam this process was speeded up both in the Levant and in Western countries.<sup>557</sup>

**PU:** Seeds of cotton are mentioned in 2 prescriptions (T-S Ar.42.110; T-S NS 108.139) and a list of *materia medica* (T-S Ar.35.388).

**TU:** Cotton is also mentioned in medical books on fevers (T-S Ar.44.57), on M.M. (T-S Ar.42.73), and in pharmacopoeias (T-S Ar.41.114).<sup>558</sup>

<sup>550</sup> al-Antaki, p. 325. Compare Ibn al-Baytar, al-Jami, IV, p. 168; Leclerc, no. 2185.

<sup>551</sup> Grieve, p. 123.

<sup>552</sup> Ducros, p. 125, no. 218.

<sup>553</sup> Ibn al-Baytar, Tafsir, p. 152.

<sup>554</sup> al-Antaki, p. 325.

<sup>555</sup> Maimonides, Glossaire, no. 349.

<sup>556</sup> Plants & Animals, XII, p. 31.

<sup>557</sup> Watson, pp. 31–41; Amar, Production, pp. 180–193.

<sup>558</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

**OMU:** al-Kindī describes the use of the cotton seeds to treat purulent wounds, and the seed oil as a preparation for lengthening the hair.<sup>559</sup> Ibn al-Bayṭār describes the plant and cites al-Rāzī on the use of cottonseed in a preparation to arouse sexual desire, and the leaves to cure cough in children.<sup>560</sup> The learned scholar al-Ghazzī describes cotton cultivation in the al-Shām region and notes that the leaves and seeds served for curative purposes.<sup>561</sup> According to Dāwud al-Anṭākī, the plant is a hot and dry drug with an intoxicating flower from which wine ‘that gladdens the heart’ is made. The plant served to regulate the heartbeat, to cure insanity, to reduce swellings, to improve the memory, to prevent diarrhoea, and to treat burns, skin diseases, and haemorrhages.<sup>562</sup>

**TM:** In Iraq the roots of plant were used to accelerate menstruation, the cotton fibers were used for absorbing and for treating wounds, and the seed oil served to soothe the skin and to produce hand creams and soaps.<sup>563</sup> Yemenite Jews used the juice of the fruit for ear drops.<sup>564</sup> The Jews of Iraq used the cotton husks to treat syphilis.<sup>565</sup>

**TAI:** Cotton was used as the main sources for textile production in the Middle Ages and therefore was an important commodity. It was imported into Egypt mainly from Syria, Tripoli, Sicily, and Tunisia and is mentioned in dozens Genizah fragments regarding its trade.<sup>566</sup>

## Crab

Crayfish, (Decapoda), **A:** *saraṭān*

**D&H:** Biological order consisting of some 10,000 species that live in sweet and salty water habitats. Medical use of the ashes of one species for the treatment of foot, and of another for snakebite, is described by Dioscorides.<sup>567</sup>

**PU:** Crab appears in a list of *materia medica* (T-S NS 305.38).

<sup>559</sup> al-Kindi, nos. 44, 143.

<sup>560</sup> Ibn al-Baytar, al-Jami, III, p. 24; Leclerc, no. 1808.

<sup>561</sup> Hamarneh, Plants, p. 253.

<sup>562</sup> al-Antaki, p. 260.

<sup>563</sup> al-Rawi & Chaakravarty, pp. 48–49, with contents of active substances. Cf. Uphof, p. 248; Grieve, p. 228.

<sup>564</sup> Reiani, no. 52.

<sup>565</sup> Ben-Yakov, p. 249.

<sup>566</sup> Goitein, Society, I, pp. 105, 418–419, IV, pp. 170–171 and see 30 fragments referring to trade in the index, p. 940.

<sup>567</sup> Dioscorides, II.12, 14.

**TU:** Crab is also mentioned in pharmacopoeias (T-S Ar.41.24; T-S Ar.41.133; T-S Ar.43.114; T-S Ar.44.77; T-S NS 164.152), in a quasi-medical note (T-S Ar.43.70), and in another fragment (T-S Ar.38.40).<sup>568</sup>

**OMU:** al-Kindī writes that one species of crab was used to treat calculi and another for collyria.<sup>569</sup> R. Nathan ben Yoel Falaquera recommends the use of crab for skin diseases, dog bites (ash with honey), scorpion sting, and cleaning the teeth.<sup>570</sup>

## Cubeb pepper

*Piper cubeba* (Piperaceae), **A:** *kabāba*, *qūbība*

**D&H:** Perennial ivy, the inflorescence is long and spike-like. The fruit is round, green in colour, and has a characteristic smell and taste. It is grown in tropical regions, usually in coffee plantations.

**PU:** Different kinds of cubeb pepper appear in 3 lists of *materia medica* (T-S Ar.35.366; T-S AS 177.9; T-S Or.1081 J.71) and in 2 prescriptions for unknown uses (T-S Ar.43.338; T-S AS 182.242).

**TU:** Cubeb pepper is mentioned in medical books (T-S Ar.40.104, T-S NS 305.58), in M.M. lexica (T-S Ar.41.29; T-S Ar.43.132; T-S Ar.44.204), in pharmacopoeias (T-S Ar.40.91; T-S Ar.44.205; T-S NS 222.22; T-S Or.1080.3.39), and in other fragments (T-S Ar.38.76; T-S NS 297.48).<sup>571</sup>

**OMU:** According to al-Kindī, cubeb pepper served to cure gum and mouth sores, as a component in a preparation for a sore throat, and in a medicine to polish, clean, and preserve the teeth.<sup>572</sup> R. Nathan ben Yoel Falaquera recommends the use of the plant as a diuretic, to treat thrush, and to opening obstructions in the liver.<sup>573</sup>

**TM:** Yemenite Jews used cubeb pepper to ease respiration, to stop phlegm, to treat kidney stones, and to cure sores and pus in the jaw and gums, but it was liable to cause constipation.<sup>574</sup> Cubeb pepper served as a disinfectant and a carminative, to cleanse the windpipe, as an expectorant, and as a diuretic.<sup>575</sup>

<sup>568</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>569</sup> al-Kindī, p. 306, no. 206, p. 281, no. 141.

<sup>570</sup> Amar & Buchman, p. 218.

<sup>571</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>572</sup> al-Kindī, prescription nos. 69, 77, 91 102, 106.

<sup>573</sup> Amar & Buchman, p. 196.

<sup>574</sup> *Ibid.*, p. 91.

<sup>575</sup> *Ibid.*, p. 411.

## Cucumber

*Cucumis sativus* (Cucurbitaceae),<sup>576</sup> **A: khiyār**<sup>577</sup>

**D&H:** Green vegetable, which originated in India. Annual plant, hairy with big split leaves, its flowers are yellow and the fleshy fruit is long. The seeds were used in medicine.

**PU:** Cucumber appears in 3 prescriptions (T-S Ar.43.338; T-S AS 155.365; T-S AS 179.283) and in 2 lists of *materia medica* (T-S Ar.39.136; T-S AS 153.51).

**TU:** Cucumber is also mentioned in general medical books (T-S Ar.44.101; T-S Ar.45.4; T-S NS 90.30) on fevers (T-S Ar.44.251), on sex (T-S Ar.44.79), on *materia medica* (T-S Ar.40.60; T-S Ar.44.204; T-S NS 164.12; T-S Or.1080.2.74), in pharmacopoeias (T-S Ar.11.13 [preparing lozenges]; T-S Ar.40.91; T-S NS 222.43), in recipes for unknown uses (T-S Ar.39.355), and in other fragments (T-S Ar.38.40; T-S NS 229.44).<sup>578</sup>

**OMU:** R. Nathan ben Yoel Falaquera (13th century) recommends the use of the plant as a diuretic, and for the treatment of diseases of the stomach.<sup>579</sup>

## Cuprite

Cu<sub>2</sub>O, **A: rāsakht, rāsukht**<sup>580</sup>

**D&H:** Inorganic material, usually red colour, which was used mainly for the treatment of inflammation and eye diseases. According to Maimonides it is burnt copper.<sup>581</sup>

**PU:** Cuprite figures in 4 lists of *materia medica* (T-S Ar.35.328; T-S Ar.35.366; T-S Ar.39.487; T-S AS 184.234) and in a prescription for unknown uses (T-S NS 297.17).

**TU:** Cuprite is also mentioned in medical books on ophthalmology (T-S Ar.43.101; T-S Ar.43.166) and in other fragments (T-S Ar.38.124; T-S NS 297.17; T-S NS 228.14; T-S Or.1080.9.6).<sup>582</sup>

<sup>576</sup> Issa, p. 62, no. 10.

<sup>577</sup> Maimonides, Glossaire, no. 388.

<sup>578</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>579</sup> Amar & Buchman, p. 135.

<sup>580</sup> Maimonides, Glossaire, no. 357.

<sup>581</sup> Ibid.

<sup>582</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

**TM:** Cuprite is sold in Jordan and Syria to the present day as medicinal substances.<sup>583</sup> It was used by Iraqi Jews for the treatment of eye diseases.<sup>584</sup>

### Cuttle-fish

*Sepia officinalis* (Sepiolidae), **A: zabad al-baḥr**

**D&H:** Marine animal with a few species that inhabit the Mediterranean Sea. The skeletons are shiny white and were used for medicine from early times.<sup>585</sup> Maimonides offers two possible identifications of 'zabad al-baḥr': a sea sponge or a light substance that originates in the volcanic mountains of Sicily.<sup>586</sup> In his entry 'lisān al-baḥr'<sup>587</sup> the substance is identified with the skeleton of the cuttle-fish. The most prolific species in the Mediterranean Sea is the Mediterranean cuttle-fish (*Sepia officinalis mediterranea*). The female has a pouch of inky liquid which serves to protect the eggs and as a defense against attackers. Skeletons of the cuttle-fish are washed up on the shores.<sup>588</sup> Dioscorides describes the use of the black liquid in the cuttle-fish (*Sepia*) to soften the stomach, to prepare a medicinal ointment to clean and strengthen the teeth, and to cure the eyes.<sup>589</sup>

**PU:** Cuttle-fish skeleton figures in 3 prescriptions (T-S Ar.39.451; T-S Ar.39.451), one of them for dental uses (T-S AS 182.77), and in an alchemical astrological preparation (T-S 8J14.3).

**TU:** Cuttle-fish is also mentioned also in medical books on ophthalmology (redness, itching, and excessive lachrymation; T-S Ar. 39.228; T-S Ar.41.40), on dentistry (T-S Ar.43.306; T-S NS 306.73), on *materia medica* (T-S Ar.39.273; T-S Ar.11.25), in pharmacopoeias (T-S AS 179.26), in some prescriptions for unknown uses (T-S Ar.39.451), and in other fragments (T-S Ar.38.9; T-S Ar.38.40; T-S Ar.38.124).<sup>590</sup>

**OMU:** al-Kindī describes the wide use of 'zabad al-baḥr' for medical purposes, mainly as a component in medications for skin diseases, gums,

<sup>583</sup> Lev & Amar, Jordan; Sanagustin.

<sup>584</sup> Ben-Yakov, I, p. 178.

<sup>585</sup> Lev & Amar, Ethnic, p. 260.

<sup>586</sup> Maimonides, Glossaire, no. 141.

<sup>587</sup> Ibid., no. 214.

<sup>588</sup> Plants & Animals, IV, pp. 81–82.

<sup>589</sup> Dioscorides, II.23.

<sup>590</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

and teeth.<sup>591</sup> al-Qazwīnī notes medical uses such as curing skin diseases, dropsy, diseases of the urinary tract and neck glands, as well as to make hair grow and to polish the teeth.<sup>592</sup> Dāwud al-Anṭākī lists three types of 'zabad al-baḥr' having various medicinal properties. The drug was hot and dry and served among other things to treat skin and eye diseases, and to polish the teeth.<sup>593</sup>

**TM:** Yemenite Jews used it to disinfect the teeth and to cure skin diseases.<sup>594</sup> The Jews of Iraq used it as a component in a medication to treat eye diseases and lacerations in the anus. It was also used to remove skin spots and freckles, to destroy stomach worms, to disinfect the teeth and gums, to prevent hair loss, and to cure women's diseases.<sup>595</sup> In Iraq too the cuttle-fish skeleton served as a polishing substance and a drug to counteract acidity. In many instances the substance was imported by pilgrims returning from Mecca and this enhanced its value among the masses.<sup>596</sup> In Pakistan the substance was used to treat eye diseases, infections, skin diseases, stings, and gum problems, and to polish the teeth.<sup>597</sup> A chemical assay of the skeleton of the Indian cuttle-fish showed it to contain 87.66% calcium carbonate, 0.76% calcium sulphate, 9.3% organic materials and water, 0.46% oxidized iron 1.7%, magnesium and potash, and 0.1% silicon.<sup>598</sup>

### Cypress tree

*Cupressus sempervirens* (Cupressaceae), **A: sarw, jawz al-sarw**<sup>599</sup>

**D&H:** Tall evergreen, which originated in the eastern Mediterranean. Fruit are rounded cones and its trunk and branches were used for buildings and woodwork. In Babylonian medicine the cypress was employed for the lungs, breast, loins, ears, stomach, and limbs. Dioscorides adds that it was used to treat polyps of the nostrils, coagulate wounds, erysipelas, carbuncles, and eye inflammation, and for the stomach.<sup>600</sup>

<sup>591</sup> al-Kindi, nos. 31, 95, 102, 106, 107, 161, 164, 216.

<sup>592</sup> al-Qazwīnī, p. 198.

<sup>593</sup> al-Antaki, p. 174. Cf. Ibn al-Baytar, al-Jami, II, pp. 154–155; Leclerc, no. 1086.

<sup>594</sup> Reiani, no. 171.

<sup>595</sup> Ben-Yakov, pp. 170, 171, 173, 179, 241, 395.

<sup>596</sup> Hooper, p. 199.

<sup>597</sup> Vohora & Khan, p. 47.

<sup>598</sup> Hooper, p. 199.

<sup>599</sup> Issa, p. 62, no. 19.

<sup>600</sup> Dioscorides, I.102.

**PU:** Cypress tree (T-S Ar.42.152) and cones of cypress tree (T-S Ar.42.152; T-S Ar.39.184; T-S Ar.39.451) figure in 4 prescriptions.

**TU:** Cypress tree is also mentioned also in medical books (T-S Ar.39.161; T-S Ar.40.66; T-S Ar.40.160; T-S Ar.44.91; T-S Ar.44.130) on ophthalmology (T-S Ar.43.76) and on dentistry (T-S Ar.41.30).<sup>601</sup>

**OMU:** al-Kindī writes that cypress leaves were used to treat heat in the face, haemorrhoids, pulsation of the rectum, and to eliminate worms. Cypress tips were used in an application for the liver.<sup>602</sup> Ibn al-Bayṭār cites authorities such as Galen and Ibn Sīnā saying it is an emollient and good for the teeth.<sup>603</sup> R. Nathan ben Yoel Falaquera recommends the use of the cone for the treatment diarrhoea and hernia.<sup>604</sup>

## Date

*Phoenix dactylifera* (Arecaceae), **A:** **tamr, balah, nakhl, busr** (unripe)

**D&H:** Subtropical tall tree with shoots that grows from the trunk base. It blooms in the spring and the fruits ripen in late summer to autumn. The fleshy fruit contains up to 70% sugar. All parts of the tree have been used by humans from early times. The fruit, juice, and wine made out of them and even the stony seeds were used in medicine.

**PU:** Dates figure in 2 prescriptions: for unknown uses (T-S NS 194.70) and in another for an aphrodisiac (T-S NS 164.159). Dried dates (‘ajwa) appear in 2 lists of *materia medica* (T-S NS 306.115), as do fresh (ma‘ādi) dates (T-S NS 306.115).

**TU:** Date is also mentioned in medical books (T-S Ar.41.137; T-S Ar.43.188; T-S Ar.43.265; T-S Ar.45.20) on dentistry (T-S Ar.43.306), on dermatology (T-S Ar.306.93), on poisons (T-S Ar.41.116), on *materia medica* (T-S Ar.39.313; T-S Ar.41.29; T-S Ar.41.37; T-S Ar.44.60), in pharmacopoeias (T-S Ar.41.123), and in other fragments (T-S Ar.38.9; T-S NS 297.206; T-S NS 327.21; T-S Or.1080.14.47). It also appears in recipes for purgatives, to stop excessive lachrymation, for helping the eyelashes to grow (T-S Ar.42.199; T-S NS 90.28), in a recipe booklet (T-S Ar.40.90 [recipe for abdominal colic and phlegm, ‘jawāriṣh al-tamarī’]; T-S Ar.43.291).<sup>605</sup>

<sup>601</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>602</sup> al-Kindī, pp. 281–282, no. 142.

<sup>603</sup> Ibn al-Bayṭār, al-Jami, III, p. 60.

<sup>604</sup> Amar & Buchman, p. 218.

<sup>605</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.



**OMU:** Maimonides and R. Nathan ben Yoel Falaquera describe date as a hot and dry substance and recommend its use of dates as an aphrodisiac, to increase male vigour, and for the treatment of diarrhoea.<sup>606</sup>

**TAI:** Date was cultivated in Egypt and was the most important local fruit. It was traded wholesale occasionally, according to merchants' letters in the Genizah.<sup>607</sup>

## Dill

Anet, *Anethum graveolens* (Apiaceae),<sup>608</sup> **A:** **shibth**

**D&H:** Tall annual, long leaves, white flowers, small seeds.<sup>609</sup> Dioscorides considered it good for the stomach and as diuretic.<sup>610</sup>

**PU:** Dill features in a prescription for unknown uses (T-S Ar.39.451).

**TU:** Dill also appears in medical books (T-S Ar.11.23; T-S Ar.42.175; T-S Ar.44.91; T-S Ar.45.45) on fevers (T-S Ar.44.57), on dermatology (T-S Ar.45.49), on poisons (T-S Ar.44.77), on *materia medica* (T-S Ar.41.118; T-S Ar.42.73; T-S Ar.44.76; T-S Ar.44.193; T-S Ar.44.204; T-S Or.1080.2.74), and in pharmacopoeias (T-S Ar.45.19; T-S NS 222.21; T-S AS 162.69; T-S Or.1080.3.39).<sup>611</sup>

**OMU:** al-Kindī writes that dill was used to treat arthritic limbs, kidneys, and bladder.<sup>612</sup> It is an analgesic that refreshes the breath, helps digestion and eases stomach irregularities.<sup>613</sup> Ibn al-Bayṭār cites al-Ghāfiqī saying it was used as emmenagogue and carminative.

**TM:** In traditional medicine in Israel the seeds are used to treat eye diseases, headache, and respiratory diseases.<sup>614</sup> Yemenite Jews used it for the treatment of stomach ailments.<sup>615</sup>

<sup>606</sup> Maimonides, Aphorisms, p. 240, Amar & Buchman, p. 148.

<sup>607</sup> Goitein, Society, I, pp. 120–121, IV, pp. 232, 247. Gil, Kingdom, III, p. 347, no. 396, IV, pp. 198–199, no. 663, p. 586, no. 794.

<sup>608</sup> Issa, p. 17, no. 10; Grieve, p. 225, Maimonides, Glossaire, no. 363.

<sup>609</sup> Lev & Amar, Ethnic, p. 224.

<sup>610</sup> Dioscorides, III.67.

<sup>611</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>612</sup> al-Kindī, p. 292, no. 166.

<sup>613</sup> Lev & Amar, Ethnic, p. 224.

<sup>614</sup> Ibid.

<sup>615</sup> Reiani, p. 10, no. 10.

## Dodder

*Cuscuta* sp. (Cuscutaceae = Convolvulaceae), **A: kashūth**<sup>616</sup>

**D&H:** The genus has 170 species, with worldwide distribution. Many species have spread widely in the wake of civilization, together with their hosts.

**PU:** Seeds of dodder feature in 3 lists of *materia medica* (T-S Ar.35.328; T-S AS 181.193, T-S Ar.39.451). Seeds of Iraqi dodder figure in 2 prescriptions (T-S Ar.43.338) and one in a powder (T-S Ar.40.87).

**TU:** Dodder is also mentioned in books: in recipes for the treatment of cold, headache (T-S NS 164.75r), sciatica, varicose veins, and venesection (T-S NS 306.172), and to strengthen penile erection (T-S AS 181.82). It also appears as a simple in a lexicon of *materia medica* (T-S Ar.40.60), in recipes for unknown uses (T-S Ar.40.141; T-S NS 327.97r; T-S AS 183.106) and in another (two potions) attributed to Galen (T-S NS 306.54).<sup>617</sup>

**OMU:** Maimonides notes various uses of the plant, including the seeds, which were a component in a medication that caused ‘sorrow and depression and led to excitation and great desire’. It was considered a hot and dry drug.<sup>618</sup> Ibn al-Bayṭār cites many who described it and its medical uses: to strengthen and cure, to fortify the liver and to open obstructions in the liver and spleen, to cure malaria, and to cleanse the stomach. It also served as a diuretic and a light purgative; it increased menstruation, relieved joint pains, and cured infections.<sup>619</sup> Al-Qazwīnī describes the plant and mentions its bitter taste and its uses: to ease hiccups, to cure jaundice, and to cause urination, accelerate menstruation, and treat infections and constipation.<sup>620</sup>

**TM:** The Jews of Iraq used it to treat chilblains, blood clots, and insanity.<sup>621</sup>

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<sup>616</sup> Maimonides, Glossaire, no. 186. Cf. Dinsmore & Dalman, nos. 1231–1235. See also: Bailey & Danin, p. 15. Discussion of identity in Amar, Ibn al-Baytar, p. 65, n. 46.

<sup>617</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>618</sup> Maimonides, Sexual, 5:6; Maimonides, Aphorisms, 21:70.

<sup>619</sup> Ibn al-Baytar, al-Jami, IV, p. 71; Leclerc, no. 1940; al-Biruni, I, p. 279.

<sup>620</sup> al-Qazwīnī, p. 239. Cf. Ibn Sina, pp. 340–341.

<sup>621</sup> Ben-Yakov, pp. 77, 194, 295, 298. European uses are given in Grieve, pp. 260–261.

### Dragon's blood

Mainly *Dracaena draco* (Dracaenaceae), **A:** **dam al-'akhawayn; shiy-yān**<sup>622</sup>

**D&H:** General name for several plants out of which red resin for medicinal uses was extracted. *Dracaema draco* originates in Sumatra and is the main species of dragon's blood.

**PU:** Dragon's blood figures in 3 lists of *materia medica* (T-S Ar.30.274; T-S AS 184.234, T-S NS 305.69).

**TU:** Dragon's blood is also mentioned in medical books (T-S Ar.40.5; T-S Ar.43.265; T-S Ar.45.20) on ophthalmology (T-S Ar.44.147; T-S Ar.45.41), on *materia medica* (T-S NS 305.69), in pharmacopoeias (T-S Ar.44.205; T-S NS 222.66), in quasi-medicine (T-S Ar.41.139), and in recipes for wounds, sand in the kidney (T-S Ar.40.85), for unknown uses (T-S Ar.39.451), and in other fragments (T-S Ar.38.78; T-S Ar.43.20; T-S Ar.43.145; T-S NS 297.48).<sup>623</sup>

**OMU:** al-Kindī writes that dragon's blood was used to treat fistula, haemorrhoids, canker, and looseness of the gum.<sup>624</sup> R. Nathan ben Yoel Falquera recommends the use of the plant to strengthen the stomach, and to treat bleeding, open wounds and diarrhoea.<sup>625</sup>

**TM:** In modern Egypt it is used in powder form as a haemostatic and cicatrizing agent.<sup>626</sup> In Iran it is used to stop haemorrhage and relieve pain in the legs and feet.<sup>627</sup>

**TAI:** Dragon's blood is mentioned in a merchant's letter from Qayrawān to Cairo regarding substances needed in Palermo.<sup>628</sup>

### Earthworm

*Lumbricus terrestris* (Lumbricidae), **A:** **kharātīn**<sup>629</sup>

**D&H:** Worms are of great importance for agriculture. With human migration and agricultural crops, many types of earthworm spread far

<sup>622</sup> Grieve, p. 262, Issa, p. 72, no. 11, Maimonides, Glossaire, no. 96.

<sup>623</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>624</sup> al-Kindī, p. 268, no. 101.

<sup>625</sup> Amar & Buchman, p. 177.

<sup>626</sup> Ducros, p. 59, no. 103.

<sup>627</sup> Hooper, p. 114.

<sup>628</sup> Ben-Sasson, p. 238, no. 58, p. 355, no. 72; Gil, Kingdom, p. 865, no. 562.

<sup>629</sup> Maimonides, Glossaire, no. 402; Plants & Animals, II, p. 6.

and wide.<sup>630</sup> Dioscorides describes the use of *Entera Ges* (earthworm) to treat ear diseases, toothache, and blockages in the urinary tract.<sup>631</sup> R. Hayyim Vital states that 'long red worms' were used as part of the treatment for haemorrhoids. The most highly recommended worms are those found under peach trees.<sup>632</sup>

**PU:** Earthworm is mentioned in prescription for a dentifrice powder (T-S AS 182.77).

**TU:** Earthworm features in a pharmacopoeia (T-S NS 222.70).<sup>633</sup>

**OMU:** Maimonides describes in great detail the preparation of a medication to strengthen the penis and to contract the glans, prepared from 'the large earthworm found in wet earth.'<sup>634</sup> Ibn al-Bayṭār, cites various uses from classical and Arab physicians, such as treating blockages in the urinary tract, and treating earache and toothache.<sup>635</sup> An identical species with a synonymous name is described elsewhere.<sup>636</sup>

**TM:** The Jews of Iraq used the 'worm that is found under the earth'. They burnt it, ground it, and spread it over the eye to prevent hair growing on the eyelid.<sup>637</sup> In Pakistan the earthworm was used to arouse strong sexual desire, and it was applied internally and externally. The earthworm was also used to cure wounds and to treat swellings, sore throat and earache, fractures, cough, jaundice, joint pains, tuberculosis, bronchitis, and paralysis, as well as to speed up the childbirth process.<sup>638</sup>

## Eggplant

*Solanum melongena* (Solanaceae), **A:** **bādinjān, bādhinjān**<sup>639</sup>

**D&H:** Domesticated tropical annual shrub of Indian origin. Tall (1.5 m), with broad hairy leaves, purple flowers, bearing large green and black-purple edible fruit.<sup>640</sup> Most researchers assert that the eggplant originated

<sup>630</sup> Plants & Animals, II, p. 161.

<sup>631</sup> Dioscorides, II.72.

<sup>632</sup> Vital, Extracts, p. 101.

<sup>633</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>634</sup> Maimonides, Sexual, 8:1.

<sup>635</sup> Ibn al-Baytar, al-Jami, II, p. 57; Leclerc, no. 789. Cf. al-Antaki, p. 138; Ibn Sina, p. 464.

<sup>636</sup> Ibn al-Baytar, al-Jami, II, p. 20; Leclerc, no. 1314.

<sup>637</sup> Ben-Yakov, p. 175.

<sup>638</sup> Vohora & Khan, p. 7.

<sup>639</sup> Maimonides, Glossaire, p. 113. Additional names are given in Ibn Rushd, no. 22. Cf. Issa, p. 171, no. 16.

<sup>640</sup> Plants & Animals, XII, p. 59.

in India, and was disseminated around the world by the Arabs. In Arab culture it was grown for food, but its toxic properties were known, especially when eaten unripe and uncooked.<sup>641</sup> Medieval sources attest that eggplant was known in the East during the early Islamic period.<sup>642</sup>

**PU:** Eggplant figures in 2 lists of *materia medica* (T-S Ar.35.82; T-S Ar.39.139) and in a prescription for unknown uses (T-S AS 177.39).

**TU:** Eggplant is mentioned in a lexicon of *materia medica* (T-S NS 164.30), in general medical books (T-S Ar.42.175) and in pharmacopoeias (T-S Ar.42.73; T-S Ar.44.129; T-S NS 22.20).<sup>643</sup>

**OMU:** Maimonides states that the 'bādinjān' is a poor food, a drug that strengthens the stomach, dispels nausea and vomiting, and is one of the hot and dry drugs.<sup>644</sup> Dāwud al-Anṭākī in his entry 'bādinjān' describes its medical uses and notes that the plant improves the smell of sweat and urine, strengthens the stomach, increases urination, relieves headaches and earache, cleanses the skin, blackens and lengthens the hair, and removes white spots and tears from the eyes. Its thorns were used to cure haemorrhoids and diseases of the anus.<sup>645</sup>

**TM:** The Jews of Iraq used the eggplants to remove bunions, to cure fissures in the anus, and to treat infertility.<sup>646</sup>

**TAI:** al-Muqaddasi reports that eggplant was found in Egypt and in the Levant.<sup>647</sup> From various Genizah fragments we learn that eggplants played an important part in the diet of the Genizah society.<sup>648</sup>

## Egyptian clover

*Trifolium alexandrinum* (Fabaceae) **A:** **birsīm, qurt**<sup>649</sup>

**D&H:** Used as a fodder in Egypt in winter and is eaten green in summer. In Iran and Iraq Egyptian clover seed is well known fodder.<sup>650</sup> The same name is also identified with bur clover (*Medicago polymorpha*).

<sup>641</sup> Watson, pp. 70–73. On the eggplant in the sources see Low, III, pp. 377–379.

<sup>642</sup> Amar, Production, p. 166.

<sup>643</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>644</sup> Maimonides, Regimen, 1:11; Maimonides, Aphorisms, 20:81; 21:75.

<sup>645</sup> al-Anṭākī, p. 67. Cf. Ibn al-Baytar, al-Jami, I, pp. 80–81; Leclerc, no. 227.

<sup>646</sup> Ben-Yakov, pp. 211, 239, 262, 366.

<sup>647</sup> al-Muqaddasi, p. 205.

<sup>648</sup> Goitein, Society, IV, pp. 230, 245.

<sup>649</sup> Ducros, p. 10, no. 18; Maimonides, Glossaire, no. 347.

<sup>650</sup> Hooper, p. 180.

**PU:** Egyptian clover features in a prescription, linctus for treating cough (T-S AS 148.22).

**TU:** Not yet found.

**OMU:** al-Kindī used Egyptian clover in a drug to retain the foetus.<sup>651</sup> Other physicians such as Ibn al-Bayṭār and Ibn Sīnā write that Egyptian clover strengthens the heart and makes it happy, improves eyesight and memory, and cures styes.<sup>652</sup>

**TM:** In modern Egypt Egyptian clover is sold by pharmacist to strengthen lactal and seminal secretions. It is also considered a laxative and a tonic.<sup>653</sup>

### Egyptian marjoram

*Origanum maru* (Lamiaceae), **A:** marṣāḥūr, za'tar, ṣa'tar<sup>654</sup>

**PU:** Egyptian marjoram figures in a prescription for unknown uses (T-S Ar.39.451).

**TU:** Not yet found.

**OMU:** al-Kindī writes that the seeds of Egyptian marjoram were used to treat swellings where abscess is feared. It was also used in perfumery products.<sup>655</sup>

**TM:** Egyptian marjoram and other similar species are confused today by the Arabs. Generally, in modern Egypt they are used as diuretics, expectorants and anti-asthmatics.<sup>656</sup>

### Elecampane

*Inula helenium, I. conyzae* (Asteraceae), **A:** rāsan<sup>657</sup>

**D&H:** An erect perennial (80 cm), with bright yellow flowers in a flat-topped cluster.<sup>658</sup> The plant was first used in Greece, whence it spread to

<sup>651</sup> al-Kindi, p. 314, no. 227.

<sup>652</sup> Ibn al-Baytar, al-Jami, I, p. 7; Ibn Sina, I, p. 261.

<sup>653</sup> Ducros, p. 10, no. 18.

<sup>654</sup> Issa, p. 130, no. 4; Maimonides, Glossaire, no. 235.

<sup>655</sup> al-Kindi, p. 336, no. 289.

<sup>656</sup> Ducros, p. 125, no. 218.

<sup>657</sup> Issa, p. 99, nos. 4, 8; Dinsmore & Dalman, no. 902; Maimonides, Glossaire, no. 353.

<sup>658</sup> Chevallier, p. 104.

Europe and Asia.<sup>659</sup> Dioscorides describes the use of the *Helenion*, identified with *Inula helenium*, to accelerate menstruation, and to treat intestinal problems and various kinds of infection, bites, and stings.<sup>660</sup> Other species, including *Inula viscosa*, are described in the entry 'Konuza' where its uses are mentioned, such as repelling harmful and poisonous creatures, destroying lice, treating wounds, stings, bites, swellings, and epilepsy, accelerating menstruation, and causing abortion.<sup>661</sup>

**PU:** Elecampane figures in 2 lists of *materia medica* (T-S Ar.30.274; T-S AS 177.227). North-African elecampane is found in another list (T-S Ar.30.274).

**TU:** Elecampane is also mentioned in medical books on fevers (T-S Ar.41.128), on *materia medica* (T-S Ar.41.133), in pharmacopoeias (T-S NS 222.70; T-S Or.1081.1.6), in recipes for loss of teeth and oral hygiene (T-S NS 306.73), and in other fragments (T-S Or.1080.13.12).<sup>662</sup>

**OMU:** The physician Assaf writes that the plant served as a diuretic drug, cured cough, bites, and stings, accelerated menstruation, and counteracted poisons.<sup>663</sup> al-Kindī describes the use of the plant to strengthen the intestines and improve digestion.<sup>664</sup> Maimonides cites al-Tamīmī in describing a drink made of elecampane called the 'royal beverage' which was beneficial for the elderly, for colds, for joint pains, and to strengthen the heart and stomach, and which also 'aroused sexual desire and stimulated coitus'. The seeds served as a component in a medication to cleanse the lungs and to strengthen the mind. It was considered a hot and moist drug.<sup>665</sup>

**TM:** *Inula helenium* was a medication against cough, to lower fever, to eliminate intestinal parasites; it was also a purgative and a diuretic. A medicinal tea produced from the plant served to dissolve kidney stones, to disinfect, to coagulate wounds, to gargle, and to treat inflamed gums.<sup>666</sup> In Iran and Iraq the plant was used to cure bronchitis and to remove phlegm, and it was considered an aromatic stimulant.<sup>667</sup> The Jews of Iraq

<sup>659</sup> Hooper, p. 129.

<sup>660</sup> Dioscorides, I.27.

<sup>661</sup> *Ibid.*, III.136.

<sup>662</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>663</sup> Assaf, III, 397–398.

<sup>664</sup> al-Kindī, no. 225.

<sup>665</sup> Maimonides, Aphorisms, 21:81, 96; Maimonides, Asthma, 12:5. Cf. Ibn Sina, p. 430.

<sup>666</sup> Palevitch et al., p. 86, with contents of active substances; Chizik, p. 644; Grieve, pp. 278–281; Uphof, p. 282.

<sup>667</sup> Hooper, p. 129.

used elecampane to cure measles and cough, and it also served as an expectorant and diuretic.<sup>668</sup> In Egypt it served as an energizing drug and a stimulant, and to accelerate menstruation.<sup>669</sup>

**TAI:** al-Muqaddasī reports that elecampane was cultivated in Jund Filastīn.<sup>670</sup>

## Eringo

Sea holly, *Eryngium sp.* (Apiaceae), **A:** qarṣaʿanna, qirṣaʿna

**D&H:** There are 230 varieties of sea holly, seven of which grow in the Levant. Medieval sources attest that three varieties of the plant were used for medicine. **White variety:** *Eryngium glomeratum*—a perennial plant, tall and erect (up to 80 cm).<sup>671</sup> **Blue variety:** *Eryngium creticum* (field eringo)—a perennial herb. **Seashore variety:** *Eryngium maritimum* (sea holly)—a perennial plant that grows along the seashore.<sup>672</sup> According to Dioscorides *Eryngion* is a food and medicinal plant, used as a heating drug, a diuretic, an emmenagogue, a cure for inflammation and epilepsy, as well as to counteract poisons, bites, and stings.<sup>673</sup>

**PU:** Eringo features in a list of *materia medica* (T-S AS 184.234).

**TU:** Not yet found.

**OMU:** Abū al-ʿAbbās al-Nabātī also describes a variety called ‘sāḥilī’ (of the sea shore)<sup>674</sup> with sweet roots that can give warmth and served to stiffen erection.<sup>675</sup> This use is also mentioned in popular medical books in Europe and is known to the present day among the Arabs of Israel.<sup>676</sup> Maimonides describes the medicinal use of the ‘water in which the “qirṣaʿna” is cooked’ to treat abscesses and to reduce gases. The plant was considered a cold and dry drug.<sup>677</sup>

**TM:** The Arabs of Israel customarily eat various kinds of sea holly<sup>678</sup> and use *Eryngium creticum* in their traditional medicine. They eat the

<sup>668</sup> Ben-Yakov, pp. 188, 219, 316–318, 323.

<sup>669</sup> Ducros, p. 88, no. 155.

<sup>670</sup> al-Muqaddasi, p. 181.

<sup>671</sup> Ibn al-Baytar, al-Jami, II, p. 92; Leclerc, no. 865.

<sup>672</sup> Description of varieties in Plants & Animals, X, pp. 248–249.

<sup>673</sup> Dioscorides, III.24.

<sup>674</sup> This is apparently *Eryngium maritimum*.

<sup>675</sup> Ibn al-Baytar, al-Jami, IV, p. 12; Leclerc, no. 1754. Cf. al-Antaki, p. 256.

<sup>676</sup> Palevitch et al., p. 82; Grieve, pp. 408–409.

<sup>677</sup> Maimonides, Aphorisms, 21:26, 73; 22:46.

<sup>678</sup> Dafni, Edible, pp. 52–53; Uphof, p. 204.



leaves or smear the ground-up root to cure open wounds and scorpion stings. The seeds serve to cure stomach ulcers and cataract, and to expel worms. The leaves are also eaten to strengthen the gums, and their juice is used to treat diabetes. The juice of the roots is drunk in order to treat kidney stones.<sup>679</sup> In Iraq the leaves and roots serve as a medication for anaemia and oedema and to protract menstruation.<sup>680</sup> In Jordan the ash of the plant is spread over scorpion stings.<sup>681</sup> *Eryngium maritimum* used to be a diuretic and served as a digestive aid, to treat the womb, and to accelerate the congealing of wounds.<sup>682</sup>

### Fenugreek

*Trigonella foenum-graecum*, (Fabaceae), **A: ḥabā, ḥulba**<sup>683</sup>

**D&H:** Strongly aromatic annual (80 cm), with trifoliolate leaves, yellowish-white pea-like flowers, and sickle-shaped pods; the small seeds are used as food and for medicine.<sup>684</sup> Fenugreek appears in such cultures as Chinese and Egyptian among medicinal plants, and was used mainly to reduce fever, to strengthen male fertility, and to treat ailments of the kidneys. It also served as a component in incense and in the drugs used in embalming.<sup>685</sup> In classical times the plant was mentioned by various physicians. Dioscorides, for instance, describes the *Telis* and reports on its medical use in ancient Egypt and in his own day, mainly for the treatment of infections and women's ailments.<sup>686</sup>

**PU:** Fenugreek features in a list of *materia medica* (T-S Ar.35.328) and in 3 prescriptions for unknown uses (T-S Ar.35.78; T-S K25.212; T-S NS 194.70).

**TU:** Powdered fenugreek is mentioned in medical books in recipes for the treatment of stomach complaints (topical application; T-S Ar.39.161), inflamed eyelids, and entropion (eye lotion; T-S Ar.39.191). It also appears as a simple in recipes for unknown uses, one of which is the preparation of a 'rob' and an electuary (T-S NS 34.16r).<sup>687</sup>

<sup>679</sup> Palevitch et al., p. 81.

<sup>680</sup> al-Rawi & Chaakravarty, p. 41.

<sup>681</sup> Dafni, *Edible*, p. 53.

<sup>682</sup> In detail in Palevitch et al., p. 82; Grieve, pp. 408–409; *Plants & Animals*, X, p. 248. Cf. Dafni, *Mandrakes*, p. 34; Dafni, *Edible*, p. 52.

<sup>683</sup> Issa, p. 183; Maimonides, *Glossaire*, no. 153.

<sup>684</sup> Chevallier, p. 276.

<sup>685</sup> Grieve, p. 299.

<sup>686</sup> Dioscorides, II.124.

<sup>687</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

**OMU:** The physician Assaf describes fenugreek. In his view, the plant and its seeds serve to heat the body in general and the kidneys in particular, and to cure cough and ailments of the lung and womb. The plant was also used to cure poisonous injuries from snakebite and scorpion stings.<sup>688</sup> al-Kindī notes the use of the plant to treat swellings, headaches, stomach ulcers, and kidney ailments.<sup>689</sup> Ibn al-Bayṭār cites classical physicians such as Galen and Dioscorides, and various Arab physicians, who assert that the plant, particularly its seeds, served to treat infections, intestinal ailments, and skin diseases, to strengthen the hair, and to cure women's diseases.<sup>690</sup> al-Qazwīnī cites Ibn Sīnā to report the use of an ointment produced from fenugreek and from the common myrtle that was effective in treating the hair and wounds, in strengthening facial skin, and in removing freckles. He says, however, that the medication stinks of 'urine smell and body sweat'.<sup>691</sup>

**TM:** The Bedouin in the Negev use the seeds to cure stomachache, to treat diabetes, to strengthen pregnant women, and to increase the flow of mother's milk.<sup>692</sup> Arab farmers in Israel use crushed leaves as a face cosmetic, for food, and for sauces; the juice of the plant is used in the cosmetics industry; the seeds are used for food, for dyeing, and for curative purposes, especially to treat diabetes, stomach-ache and open wounds.<sup>693</sup> Yemenite Jews made similar use of the seeds, and they also used it to cure women's ailments, to increase virility, to treat haemorrhoids, swellings, spleen ailments and burns, and for hair grooming.<sup>694</sup> In Iraq and Iran they use the seeds to treat problems of the intestines and the heart.<sup>695</sup>

## Fish

### *Oseichthyes*, **A: samak**

**D&H:** This systematic group consists of 30,000 species. The fish are covered with scales, sophisticated gills, and flexible fins. Most of them lay

<sup>688</sup> Assaf, IV, 171, 405.

<sup>689</sup> al-Kindī, nos. 1, 29, 30, 32, 49, 50.

<sup>690</sup> Ibn al-Baytar, al-Jami, II, pp. 25–26.

<sup>691</sup> al-Qazwīnī, p. 245. Compare Ibn Sina, p. 320.

<sup>692</sup> Abu-Rabia, p. 16.

<sup>693</sup> Krispil, p. 112; Palevitch et al., p. 53.

<sup>694</sup> Reiani, p. 50.

<sup>695</sup> Hooper, pp. 180–181.

eggs. Hundreds of species were eaten at the ancient world, freshwater as well as saltwater fish.

**PU:** Fish appears in 3 lists of *materia medica* (T-S Ar.39.139; T-S AS 177.227; T-S NS 164.12).

**TU:** Fish is also mentioned in medical books: in recipes (unknown uses; T-S Ar.41.66; T-S Ar.41.134; T-S Ar.44.101; T-S Ar.44.130; T-S AS 178.241; T-S NS 164.152) and others dealing with diet and facial skin complaints (T-S Ar.45.49), invalid dishes (T-S AS 182.308), and dermatology (T-S Ar.42.22), and in another fragment (T-S NS 297.86).<sup>696</sup>

**OMU:** Maimonides recommends consumption of fish (from rocky environments) and adder meat for lepers.<sup>697</sup> R. Nathan ben Yoel Falaquera recommends eating fish for jaundice sufferers and using fish to treat constipation, poisoning, bites, and stings.<sup>698</sup>

**TAI:** Saltwater as well as freshwater fishes was caught, pickled, salted, sold and eaten in the cities of Egypt and the region.<sup>699</sup>

## Fumitory

*Fumaria officinalis* (Fumariaceae), **A:** *shāhtaraj*<sup>700</sup>

**D&H:** Perennial weed (30 cm), decreed leaves; inflorescence is bunched, with pink flowers. The plant originated in Europe and North Africa. Dioscorides found fumitory effective in helping to retain the eyebrows, and when eaten it expels 'choleric urine'.<sup>701</sup>

**PU:** Fumitory figures in a prescription for unknown uses (T-S Ar.40.141).

**TU:** Fumitory appears in medical books (T-S Ar.40.50) on dermatology (T-S NS 90.60), on *materia medica* (T-S Ar.41.61; T-S Ar.42.73; T-S Ar.44.204), in pharmacopoeias (T-S Ar.45.33; T-S NS 222.27; T-S AS 180.19), in a recipe booklet (T-S Ar.40.64 [pain]), and in other fragments (T-S NS 297.48).<sup>702</sup>

<sup>696</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>697</sup> Maimonides, Aphorism, 9:108.

<sup>698</sup> Amar & Buchman, p. 122.

<sup>699</sup> Goitein, Society, I, pp. 126, 167, IV, pp. 250–251; Gil, Kingdom, IV, p. 319, no. 699.

<sup>700</sup> Issa, p. 85, no. 10, Maimonides, Glossaire, no. 358.

<sup>701</sup> Dioscorides, IV.110.

<sup>702</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

**OMU:** al-Kindī employed fumitory in an infusion and in a decoction which he devised.<sup>703</sup> Ibn Sīnā used fumitory for the treatment of black gall or melancholy.<sup>704</sup> R. Nathan ben Yoel Falaquera recommends the use of fumitory (liquid made from the plant and sugar) as a diuretic and for the treatment of skin diseases, cleaning the blood, and strengthening the stomach.<sup>705</sup>

**TM:** Fumitory is used in Iran to relieve pain in the back in pregnancy.<sup>706</sup> In Iraq it is used in infusion as alterative, tonic, diuretic, diaphoretic, stomachic, depurative, sudorific, laxative, febrifuge, aperient, cholagogue, and sedative.<sup>707</sup>

**TAI:** There is one attestation to its trade as a medicinal substance.<sup>708</sup>

## Galingale

Galanga, *Alpinia galanga* (Zingiberaceae), **A:** **khūlanjān, khawlanjān**<sup>709</sup>

**D&H:** Perennial plant, which originated in South-East Asia and is typical to tropical areas. The rhizome is dark reddish brown, cylindrical, and marked at short intervals by raised rings, which are scars of the leaf base. It has been used as a condiment, a spice and in medicine since early times.<sup>710</sup>

**PU:** Galingale appears twice in a prescription for unknown uses (T-S AS 173.3 PF) and in 3 lists of *materia medica* (T-S Ar.34.341, T-S Ar.35.366; T-S AS 182.3).

**TU:** Galingale is also mentioned in medical books on sex (T-S Ar.44.79), on *materia medica* (T-S Ar.44.76; T-S Ar.44.90; T-S Ar.44.205; T-S Ar.45.14), in pharmacopoeias (T-S Ar.40.91; T-S NS 222.59; T-S AS 178.260), and in recipes for stomach ailments, colic, and a tonic (T-S Ar.43.320; T-S Ar.45.28), and in some for unknown uses (T-S Ar.40.64; T-S AS 184.293; T-S Ar.39.443; T-S Ar.40.1; T-S Ar.41.66; T-S Ar.41.78).<sup>711</sup>

<sup>703</sup> al-Kindi, pp. 289–290, no. 161.

<sup>704</sup> Ibn Sina, I, p. 434.

<sup>705</sup> Amar & Buchman, p. 247.

<sup>706</sup> Hooper, p. 121.

<sup>707</sup> al-Rawi & Chaakravarty, p. 46.

<sup>708</sup> Gil, Kingdom, II, p. 676, no. 231; Dietrich, Egypt.

<sup>709</sup> Issa, p. 10, no. 13; Maimonides, Glossaire, no. 398.

<sup>710</sup> Wren, p. 122.

<sup>711</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

**OMU:** According to al-Kindī, the galanga was used to treat stomach problems and excessive addiction to sex, to strengthen respiration, and as toothpaste.<sup>712</sup> According to Maimonides, it was one of the components in a medication to improve virility, and in another medication called ‘the great aṭrīfal’, and it also served to cure haemorrhoids, to strengthen the bodily organs, mainly the heart and senses, and to delay aging. The plant was listed with the hot and dry drugs.<sup>713</sup> Ibn al-Bayṭār cites many physicians and lists several uses: treating stomach problems, increasing appetite, easing digestion, reducing flatulence, improving virility, and enhancing the memory.<sup>714</sup>

**TM:** In Egypt the galanga root serves as an aromatic drug and a carminative, and arouses sexual desire.<sup>715</sup> Yemenite Jews used the galanga to regulate bowel movement, the liver, the stomach, and urination, to prevent vomiting, jaundice, and kidney infection, and to ease respiration.<sup>716</sup> The Jews of Iraq made use of the galanga to assist in treating eye diseases and to improve virility.<sup>717</sup> Similar uses are also known in Europe.<sup>718</sup>

**TAI:** The galanga was one of the spices that the merchants of Italy imported from Greater Syria and from Egypt.<sup>719</sup> It is mentioned in the Genizah documents as being exported from Egypt to Sicily (Palermo) through North Africa.<sup>720</sup> In the accounts of the Italian trading houses, galanga is listed with products imported from this region in the 1570s and 1580s.<sup>721</sup>

<sup>712</sup> al-Kindi, nos.4, 101, 213, 226. Cf. al-Biruni, I, 138.

<sup>713</sup> Maimonides, Sexual, 9; Maimonides, Regimen, 3:11; Maimonides, Aphorisms, 21:80; 22:66.

<sup>714</sup> Ibn al-Baytar, al-Jami, II, 79–80; Leclerc, no. 829. Cf. al-Antaki, p. 148.

<sup>715</sup> Ducros, p. 57, no. 100.

<sup>716</sup> Reiani, no. 7.

<sup>717</sup> Ben-Yakov, pp. 182, 217.

<sup>718</sup> Grieve, p. 340.

<sup>719</sup> Giovanni Scriba, nos. 264, 425.

<sup>720</sup> Gil, Kingdom, III, p. 864, no. 562; Ben-Sasson, p. 240, no. 58.

<sup>721</sup> Ashtor, Trade, p. 299.

## Garden rocket

*Eruca sativa* (Brassicaceae), **A: jirjir**<sup>722</sup>

**D&H:** The garden rocket was used as food and medicine in early cultures in the ancient world of Mesopotamia and Egypt.<sup>723</sup> Pliny describes the plant and reports that it improves the eyesight, while Dioscorides describes *Euzomon* (wild and cultivated) which served as food, condiment, diuretic, a cure for stomach problems, and an aphrodisiac.<sup>724</sup> The Jewish Sages note that the plant has many seeds (Bab. Talmud, Yoma, 18a) and cures the eyes (Bab. Talmud, Shabbat, 109a).

**PU:** Garden rocket (seeds) figures in 3 prescriptions (T-S Ar.42.152; T-S AS 173.3; T-S Ar.30.16) and in 2 lists of *materia medica* (T-S Ar.35.366; T-S AS 179.132).

**TU:** Garden rocket is also mentioned in medical books on sex (as treatment of paresis and weakness of the sexual organ, and as an aphrodisiac; T-S Ar.41.75; T-S AS 179.226), on ophthalmology (T-S Ar.41.24), M.M. (T-S Ar.44.129; T-S Ar.44.204), in pharmacopoeias (T-S Ar.41.114; T-S Ar.45.19; T-S NS 222.74; T-S AS 181.82), on quasi-medicine (T-S Ar.11.17), in recipes for strengthening penile erection and for spring wine (T-S AS 181.82), in other recipes (T-S Ar. T-S Ar.40.1; T-S Ar.40.68; T-S Ar.41.66; T-S NS 90.71; T-S NS 164.80; T-S AS 180.135), and in another fragment (T-S Ar.38.103).<sup>725</sup>

**OMU:** The physician Assaf states that the plant was used to increase the strength of the sperm, to enhance sexual desire, to cure internal diseases, to open obstructions in the urinary tract, to increase mother's milk, and to dispel gases.<sup>726</sup> According to al-Kindī, the seeds were a component in medications against insanity and stomach pains.<sup>727</sup> Maimonides claimed that 'jirjir' was a food easy to digest, containing a fine substance, and was a wet and hot drug that encouraged the secretion of saliva.<sup>728</sup> The seeds were used in the preparation of various concoctions and medications

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<sup>722</sup> Identification and other names: Maimonides, Glossaire, no. 74; Issa, p. 77, no. 12. Cf. Dinsmore & Dalman, no. 117.

<sup>723</sup> al-Kindī, p. 252, no. 60.

<sup>724</sup> Dioscorides, II.169–170.

<sup>725</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>726</sup> Assaph, IV, 406.

<sup>727</sup> al-Kindī, no. 205, 226.

<sup>728</sup> Maimonides, Aphorisms, 20:49; 21:77.

to improve sexual performance.<sup>729</sup> Ibn al-Bayṭār cites Dioscorides who reports that eating the flowers and seeds arouses desire for sexual intercourse, induces urine, and softens the stomach. Galen is also cited on the subject of increasing desire. Most of the medieval physicians and dieticians cited by Ibn al-Bayṭār recommend the use of the plant to increase the appetite and the desire for sexual intercourse, and to curing facial sores.<sup>730</sup> al-Qazwīnī, reports on its use to remove freckles, to improve the smell of sweat in the armpit, and to eliminate sores. According to him, the seeds with the addition of honey increase sexual desire.<sup>731</sup>

**TM:** The seeds produce oil that is used for lighting, food, and medicine.<sup>732</sup> The Jews of Iraq used the plant to cure headache.<sup>733</sup> The plant was a diuretic and a stimulant, and was effective for stomach problems and against scurvy.<sup>734</sup> In Europe the plant was used among other things to induce vomiting.<sup>735</sup>

## Garlic

*Allium sativum* (Alliaceae), **A:** thūm<sup>736</sup>

**D&H:** Garlic is a perennial herb with a bulbous root consisting of small cloves. It has spear-shape leaves and its flowers are pink or white. The cultivated species is *Allium cepa*, a well known ancient agricultural crop. Garden garlic was widely cultivated in Egypt and Rome. It is mentioned in the Bible (Numbers 11:5) and by the Jewish Sages<sup>737</sup> who describe its medicinal uses in treating toothache and wounds. The Talmud says that it ‘satisfies, anoints and brightens the face, increases sperm and kills intestinal worms, and some say it even generates love and expels jealousy’. Dioscorides notes that the *skorodon* (a species of garlic) kills intestinal worms and is a most effective medicine against snakebite and the bite of a rabid dog. It eliminates lice, cures baldness, and also acts as

<sup>729</sup> Maimonides, *Sexual*, p. 56.

<sup>730</sup> Ibn al-Baytar, *al-Jami*, I, pp. 160–161; Leclerc, no. 473.

<sup>731</sup> al-Qazwīnī, p. 244. Cf. Ibn Sina, p. 288.

<sup>732</sup> Dafni, *Edible*, p. 24; Krispil, p. 91. For contents of substances see Uphof, p. 203.

<sup>733</sup> Ben-Yakov, pp. 119, 367.

<sup>734</sup> Uphof, p. 203; Yaniv et al., *Rocket*.

<sup>735</sup> Grieve, p. 681.

<sup>736</sup> Issa, p. 9, no. 15.

<sup>737</sup> Summary of sources in Feliks, *Plants*, p. 156; Feliks, *World*, p. 172; Low, II, pp. 138–148; Singer, *Garlic*.

an emmenagogue.<sup>738</sup> Garlic is a medicinal plant even in the Muslim holy scriptures and in the treatises of many Arab physicians.<sup>739</sup>

**PU:** Garlic features, sometimes twice, in 4 lists of *materia medica* (T-S AS 177.227; T-S NS 306.115; T-S NS 325.127; T-S AS 153.51) and in a prescription for unknown uses (T-S NS 265.62).

**TU:** Garlic is also mentioned in medical books (T-S Ar.39.468; T-S AS 179.329), at the beginning of a medical work opening with the *basmalah* and referring to the sayings of the Jewish Sages. The text starts with a recipe for cleansing facial skin and resolving puffiness under the eyelids, and ulcerated scabs; besides garlic, mustard, nard, lard, and olive oil are mentioned (T-S AS 180.231r).<sup>740</sup>

**OMU:** The physician Assaf describes the uses of wild garlic that grows on mountains as ‘a strong antidote to fatal drugs and snakebite and for all poisonous plants, from which one may drink and be healed’. Elsewhere he recommends ‘garlic water’ to cure eye inflammation.<sup>741</sup> al-Kindī reports the use of garlic to reduce pains of lung inflammation.<sup>742</sup> al-Tamīmī mentions ‘thūm barrī’ (wild garlic) as one of the substances he used to make theriac. He praises its medicinal actions and asserts that the plant itself can replace the concocted theriac.<sup>743</sup> Maimonides states that ‘thūm’ is an easily digested food and calls it the ‘village theriac’ because of its medicinal properties. He also recommends that garlic be eaten by those who have been bitten.<sup>744</sup> Ibn al-Bayṭār describes the plant in his entry ‘thūm’ and lists its names and uses among the physicians of his time and of the classical period. Garlic is considered by the medieval Arabic physicians a hot and dry drug, used to eliminate intestinal worms, to cleanse the throat, to relieve chronic coughs and toothache, to treat diseases of the skin, eyes, and teeth, and as an emmenagogue, as well as to cure the stomach, to treat bites and stings, and to increase urine flow.<sup>745</sup>

<sup>738</sup> Dioscorides, II.182; Historical summary in El-Gammal, Garlic.

<sup>739</sup> Ibn Qayyim, p. 193.

<sup>740</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>741</sup> Assaph, IV.418.

<sup>742</sup> al-Kindī, no. 123.

<sup>743</sup> Amar, Tamimi, p. 18; al-Ansari, p. 70b, 78a.

<sup>744</sup> Maimonides, Aphorisms, 20:49; 21:39, 80; Maimonides, Poisons, p. 133; al-Biruni, I, p. 102.

<sup>745</sup> Ibn al-Baytar, al-Jami, I, pp. 151–153; Leclerc, nos. 453–453. Cf. al-Antaki, p. 101; Ibn Sina, pp. 449–450.



**TAI:** Garlic was an important vegetable in the kitchen of the Genizah people.<sup>746</sup> At the end of the 12th century ‘thūm’ was listed among the vegetables sold in Acre.<sup>747</sup>

## Goat

*Capra hircus mambrica* [products: fat, bile, kidney, milk, meat, horn], (Bovidae), **A:** ‘anz, mā’iz, jady

**D&H:** Domesticated animal, solid body, short and strong legs, two horns facing the rear, and unique climbing ability. Five to six month of pregnancy yield 1–2 kids. Humans have used goats for their milk, meat, and wool since early times.

**PU:** Fat of liver of goat as well as fat of goat feature in a prescription for unknown uses (T-S Ar.30.310; T-S NS 306.134) and female goat appears in a list of *materia medica* (T-S Ar.39.487).

**TU:** Goat is also mentioned in medical books on ophthalmology (T-S Ar.43.76), on dentistry (T-S Ar.42.44; T-S Ar.43.306), on fevers (T-S NS 224.186), on dermatology (T-S Ar.45.49), on poisons (T-S Ar.43.43; T-S Ar.44.77), on of *materia medica* (T-S Ar.41.61; T-S Ar.44.90; T-S Ar.44.153; T-S Ar.44.218), in pharmacopoeias (T-S NS 222.58; T-S NS 222.59; T-S NS 222.67), in a recipe for increasing growth of the eyebrows and making the hair black (burnt horn; T-S Ar.39.20), in other recipes (T-S Ar.39.278; T-S Ar.41.134; T-S Ar.44.91; T-S NS 90.79 [kidney diseases]; T-S AS 180.135), and in other fragments (T-S NS 297.39; T-S NS 297.48; T-S Or.1080.13.33).<sup>748</sup>

**OMU:** Saladino d’Ascoli describes methods of milk preservation and medical use (mainly for soaking), noting that it is better to use goat’s milk.<sup>749</sup> The Bedouins in the Negev used goat’s milk to cure scorpion stings or snakebite.<sup>750</sup> Yemenite Jews made medical use of many body parts and products of goats and cattle, such as hooves, feet, lungs, gall, liver, fat, and milk products.<sup>751</sup> Balls of dried cheese, called ‘karkūt’, made of the milk of a cow, buffalo, or goat, were used in Iran, Iraq,

<sup>746</sup> Goitein, Society, IV, pp. 230, 232.

<sup>747</sup> Ibn Jubayr, p. 314.

<sup>748</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>749</sup> Saladino, p. 80.

<sup>750</sup> Abu-Rabia, p. 15.

<sup>751</sup> Reiani, no. 153.

and Afghanistan both as medicine and as food after treatment against worms.<sup>752</sup>

## Gold

### Au, A: **dhahab**

**D&H:** Gold is an element found in nature in free formation. It was produced in the ancient world mainly in East Africa and Arabia.

**PU:** Gold figures in a list of *materia medica* (T-S AS 176.151) and in prescriptions for unknown uses (T-S Ar.43.338).

**TU:** Scoria of gold is also mentioned in medical books on ophthalmology (T-S Ar.43.66; T-S AS 183.201 [recipe to treat trachoma and ulcer]), on quasi-medicine (T-S Ar.39.302; T-S Ar.43.281; T-S Ar.44.45; T-S Ar.44.59; T-S 20.20), in recipes for eye diseases (collyrium; T-S AS 153.89), and in other fragments (T-S K 14.12; T-S Ar.43.266; T-S NS 297.56; T-S NS 327.81; T-S Or.1080.14.6).<sup>753</sup>

**OMU:** Maimonides describes the use of gold treated with vinegar to improve bad breath; regular gold was used to improve eye sight.<sup>754</sup> Ibn al-Bayṭār prescribes scoria (usually of copper) for eye diseases, and as a purgative of yellow bile and water.<sup>755</sup> R. Nathan ben Yoel Falaquera recommends the use of gold for the treatment of heart problems and diseases as well as psychological/pancreatic diseases. It was also used to improve bad breath.<sup>756</sup>

**TAI:** Gold was a common commodity exported to Egypt from the Maghreb and Sicily (Palermo) and therefore features in many fragments, mainly traders' letters.<sup>757</sup>

<sup>752</sup> Hooper, p. 197.

<sup>753</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>754</sup> Maimonides, Aphorisms, 22:39, p. 273, 22:68, p. 278.

<sup>755</sup> Ibn al-Baytar, al-Jami, I, pp. 145–146.

<sup>756</sup> Amar & Buchman, p. 185.

<sup>757</sup> Gil, Kingdom, I, p. 560, IV, p. 167, no. 654; Goitein, Society, I, pp. 99–100, 200, 368, IV, pp. 202–203; Amar, Gold.

## Gypsum

CaSO<sub>4</sub>. H<sub>2</sub>O **A:** **jibsīn**<sup>758</sup>

**D&H:** Calcium sulphate or gypsum is found in nature as quartz crystals. These are colourless and transparent, found in different formats, and are used in the paper and building industries. Gypsum is described by Dioscorides, who indicates medicinal uses such as stopping bleeding and sweating, and as having a restraining faculty.<sup>759</sup>

**PU:** Gypsum appears in a prescription for unknown uses (compound—T-S AS 177.40).

**TU:** Gypsum is mentioned in a pharmacopoeia (T-S Ar.45.31).<sup>760</sup>

**OMU:** Ibn Sīnā recommends smearing gypsum on the forehead or the head to stop nosebleed. It was also used for the treatment of eye inflammations, and was considered one of the strangling drugs.<sup>761</sup>

## Hazelnut

*Corylus avellana* (Betulaceae = Corylaceae), **A:** **bunduq, lawz bunduq**<sup>762</sup>

**D&H:** The nut of the hazel tree was used as an important component in European fare because of its high oil and protein content. Today the tree is grown agriculturally and the nut is exported, mainly from Italy, Turkey, Spain, and Iran. Oil is produced from the hazelnut for food, dyeing, and use in the cosmetics industry.<sup>763</sup> Dioscorides, in his entry *Karua pontika*, notes that the nut is beneficial for the stomach, cures cough, and makes hair grow.<sup>764</sup>

**PU:** Hazelnut features in a list of *materia medica* (T-S Ar.35.229) and in 4 prescriptions: for dressing bites (T-S NS 164.98), cough (T-S 8J15.20) and a plaster (T-S NS 222.34), and for unknown uses (T-S AS 177.422).

**TU:** Hazelnut is also mentioned in medical books (T-S Ar.40.194; T-S Ar.41.66) on poison (T-S Ar.43.43), in lexica of *materia medica* (T-S NS

<sup>758</sup> Maimonides, Glossaire, no. 78.

<sup>759</sup> Dioscorides, V, 134, 153.

<sup>760</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>761</sup> Ibn Sina, I, p. 285.

<sup>762</sup> Maimonides, Glossaire, no. 43; al-Nuwayri, XI, p. 9; Issa, p. 59.

<sup>763</sup> Plants & Animals, XII, p. 139; Uphof, p. 154.

<sup>764</sup> Dioscorides, I.179.

164.8v; T-S AS 178.81), in recipes for emmenagogues and abortifacients (T-S Ar.45.30), and in other fragments (T-S AS 177.51).<sup>765</sup>

**OMU:** Maimonides reports that hazelnut was especially good for strengthening the intestines.<sup>766</sup> Ibn al-Bayṭār cites classical and contemporary physicians regarding its medical uses: cleansing the intestines, improving memory, curing haemorrhages in the chest and lungs, treating scorpion bites, reducing gases, and causing constipation and vomiting.<sup>767</sup> Dāwud al-Anṭākī states that the fruit (nut) is effective against palpitations of the heart, poisons, infections of the urinary tract, memory loss, cough, weakness of the bowels, and weakness of sight. The nut was also used to treat epilepsy, open wounds, facial spasms, gases, and colds.<sup>768</sup>

**TM:** In Iraq and Iran *Corylus colurna* was used for food and for curative purposes.<sup>769</sup> The Jews of Iraq used 'bindal' to treat variola (smallpox), bleeding, diseases of the skin and eyes, and to improve the memory and to increase semen and mother's milk.<sup>770</sup>

**TAI:** Hazelnut is mentioned in various sources of the Mamluk period in lists of crops of the Levant.<sup>771</sup> Apparently its cultivation was restricted to high mountainous areas.<sup>772</sup> The nuts were imported into Egypt and sold in shops in cities such as Alexandria and Cairo.<sup>773</sup>

## Hellebore

*Helleborus albus* [identified also as *Veratrum album*]<sup>774</sup> (Ranunculaceae), **A:** **kharbaq**<sup>775</sup>

**D&H:** Hellebore is a plant native to sub-alpine forests in southern and eastern Europe and Turkey. It is cultivated in Britain as an ornamental plant. It is relatively short (30 cm) with white flowers.<sup>776</sup> Dioscorides

<sup>765</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>766</sup> Maimonides, Aphorisms, 20:89; Maimonides, Poisons, pp. 117, 132.

<sup>767</sup> Ibn al-Baytar, al-Jami, I, p. 119; Leclerc, no. 357. Cf. Ibn Sina, p. 275.

<sup>768</sup> al-Antaki, p. 85. Cf. al-Biruni, I, pp. 78–79.

<sup>769</sup> Hooper, p. 106.

<sup>770</sup> Ben-Yakov, pp. 78, 122, 146, 148, 150, 159, 176, 193, 218.

<sup>771</sup> al-Qalqashandi, p. 87; al-Badri, p. 185 ff.; al-'Umari (Sayyid ed.), p. 25. Cf. Post, p. 120.

<sup>772</sup> Suriano, p. 223.

<sup>773</sup> Gil, Kingdom, II, pp. 837–839, no. 280, III, p. 23, no. 310, p. 750, no. 524 and more; Goitein, Society, I, p. 121, II, p. 467, IV, p. 441.

<sup>774</sup> Issa, p. 187, no. 11; al-Kindi, p. 263, no. 88.

<sup>775</sup> Issa, p. 92, no. 18; Maimonides, Glossaire, no. 399.

<sup>776</sup> Wren, p. 141.

regards it as good to expel the embryo and menses, to provoke sneezing and vomiting, to kill mice, and to purge.<sup>777</sup>

**PU:** Hellebore features in 2 lists of *materia medica* (T-S AS 182.222; T-S Ar.35.366).

**TU:** Hellebore is also mentioned in books: as a simple in lexica of *materia medica* (T-S Ar.39.369; T-S Ar.39.351; T-S Ar.40.60) and in recipes for unknown uses (T-S AS 176.401; T-S AS 176.400).<sup>778</sup>

**OMU:** al-Kindī writes that hellebore was used to kill mice.<sup>779</sup> R. Nathan ben Yoel Falaquera describes it as a strong substance and recommends its use as a diuretic and for the treatment of skin diseases, warts, epilepsy, and madness. It also drains black bile, eases toothache, and improves the eyesight.<sup>780</sup>

**TM:** In modern Egypt hellebore, mainly the black kind, is used as a drastic purgative, a vermifuge, and a sternutative.<sup>781</sup> In Iran it is used externally for the treatment of headaches and facial neuralgia and as a relieving agent for nasal catarrh.<sup>782</sup>

**TAI:** Makhlef Ben Isaac in a letter to one of his people in Cairo requests the purchase of several medical materials, including white and red hellebore.<sup>783</sup>

## Henbane

Hemlock, *Hyoscyamus albus*, *H. niger* (Solanaceae), **A:** **banj**, **shawkarān**, **saykarān**<sup>784</sup>

**D&H:** Annual or biannual plant with large leaves and yellow flowers. All plant's parts consist of alkaloids (mainly atropine) and are therefore deadly poisonous. Seeds were used as medicinal substances. Dioscorides uses various species of henbane for inflammation, gout, pain, and eye diseases.<sup>785</sup>

**PU:** Henbane features in a list of *materia medica* (T-S Ar.39.487) and a prescription to stop bleeding (T-S NS 139.31).

<sup>777</sup> Dioscorides, IV.151, see also no. 150.

<sup>778</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>779</sup> al-Kindi, p. 263, no. 88.

<sup>780</sup> Amar & Buchman, p. 198.

<sup>781</sup> Ducros, p. 53, no. 94.

<sup>782</sup> Hooper, p. 183.

<sup>783</sup> Dietrich, Egypt.

<sup>784</sup> Issa, p. 96, nos. 3–5; Maimonides, Glossaire, no. 58.

<sup>785</sup> Dioscorides, IV.69.

**TU:** Henbane is also mentioned in medical books (T-S Ar.41.55; T-S Ar.41.80 [recipe for temperate body]; T-S Ar.42.68; T-S Ar.42.167; T-S Ar.43.138; T-S Ar.43.265; T-S AS 183.179 [swelling of ears]) on ophthalmology (T-S Ar.41.24), on poisons (T-S Ar.44.77), on *materia medica* (T-S Ar.39.208; T-S Ar.41.55; T-S AS 184.375), in pharmacopoeias (T-S Ar.41.90; T-S Ar.41.96; T-S Ar.44.205; T-S Ar.45.14; T-S NS 222.70; T-S Or.1080.3.39), in recipes for theriac, against palpitation, against excessive lachrymation, and for helping eyelids to grow (T-S Ar.42.199; T-S NS 90.28), in recipes for unknown uses (T-S Ar.39.487), and other fragments (T-S Or.1080.13.12).<sup>786</sup>

**OMU:** R. Nathan ben Yoel Falaquera describes two kinds of henbane (black and white) and recommends their use to ease toothache and earache (with rose oil and vinegar), and to staunch bleeding. It was also used for the treatment of eye diseases, spitting blood, and women's diseases.<sup>787</sup> al-Kindi uses henbane in a compound remedy for cold ailments, insanity, epilepsy, and black bile.<sup>788</sup>

**TM:** The leaves of *Hyoscyamus albus* are used in modern Egypt as a narcotic and as an unguent in cataplasm.<sup>789</sup> In Iraq the plant is used as an anodyne, a narcotic, and a sedative, and *Hyoscyamus niger* is used as a sedative and a parasymphatholitic.<sup>790</sup>

## Horehound

*Marrubium vulgare* (Lamiaceae), **A:** **farāsiyūn**<sup>791</sup>

**D&H:** Perennial Mediterranean weed, few hairy stems [dense and therefore white]. The flowers are white and have a strong smell. The scientific name as well as the Hebrew ['maror'] possess the particle 'mar', meaning bitter, so it was identified as one of the five kinds of Passover 'bitter herbs'. The classical sources describe the plant as a stimulant, a strong diuretic, and a substance for the treatment of respiratory diseases and for inducing menstruation.<sup>792</sup>

<sup>786</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>787</sup> Amar & Buchman, p.

<sup>788</sup> al-Kindi, p. 246, no. 45.

<sup>789</sup> Ducros, p. 24, no. 43.

<sup>790</sup> al-Rawi & Chaakravarty, pp. 53–54.

<sup>791</sup> Issa, p. 115, no. 5; Maimonides, Glossaire, no. 306.

<sup>792</sup> Palevitch et al., pp. 105–106.

**PU:** Horehound figures in a prescription for unknown uses (T-S Ar.41.125).

**TU:** Horehound also appears in medical books on diseases relating to travelling (T-S Ar.11.30), on ophthalmology (T-S NS 90.27), in pharmacopoeias, in lexica of *materia medica* (T-S Ar.11.31; T-S Ar.39.375; T-S Ar.41.138; T-S Ar.43.251; T-S Ar.44.204; T-S NS 164.152; T-S AS 179.302), and in other fragments (T-S NS 146.152; T-S NS 297.48; T-S NS 297.114; T-S AS 181.57; T-S Or.1080.13.12).<sup>793</sup>

**OMU:** Ibn Sīnā writes that a decoction of the plant cures chronic earache, improves hearing and eyesight, cleans the lungs, womb and chest, opens obstructions in the liver and spleen, cures rabid dog bites, and expels the menses.<sup>794</sup>

### Horned Poppy

*Glaucium corniculatum* (Papaveraceae), **A:** *māmīthā*<sup>795</sup>

**D&H:** The generic name derives from the Greek *glaukos*, which means greenish blue, the colour of the leaves of many of its species. An allied species is *Glaucium flavum*, which was used by the Greeks to disinfect bruises and wounds and to treat the eyes of sheep. Dioscorides, in his entry *Glaukion*, notes that the plant grows in Syria, and from its extract the inhabitants prepared a cool and soothing medication for the eyes.<sup>796</sup>

**PU:** Horned poppy features in a list of *materia medica* (T-S NS 321.49) and in a prescription for unknown uses (T-S Ar.30.227).

**TU:** Horned poppy is also mentioned in books: in recipes for unknown uses (T-S AS 176.494), one of which (ointment) is based on pigeon fat (T-S Ar.40.133). It also appears in medical books (T-S Ar.39.124; T-S Ar.40.111; T-S Ar.42.144; T-S Ar.44.150) on ophthalmology (T-S Ar.39.478; T-S Ar.41.40; T-S Ar.43.76; T-S Ar.43.101; T-S Ar.43.166; T-S Ar.43.173; T-S Ar.43.263; T-S Ar.44.13; T-S Ar.44.147; T-S Ar.44.150; T-S AS 184.363), on M.M. (T-S Or.1080.2.74), and in other fragments (T-S Ar.38.124).<sup>797</sup>

<sup>793</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>794</sup> Ibn Sina, I, p. 409.

<sup>795</sup> Sapir, p. 18; Dinsmore & Dalman, p. 50; Issa, p. 87, no. 15.

<sup>796</sup> Dioscorides, III.100.

<sup>797</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

**OMU:** al-Kindī reports the use of the plant in a dry collyrium to prepare a medication for various eye diseases.<sup>798</sup> al-Bīrūnī describes the use of the plant to treat eye diseases, to relieve pains, and to soothe.<sup>799</sup> Maimonides states that it is a cold and dry drug.<sup>800</sup> Ibn al-Bayṭār notes that the plant was previously described by Dioscorides, and cites the uses listed by him, as well as similar ones by physicians of his own time.<sup>801</sup>

**TM:** The Arabs of Israel use the petals of the red horned poppy to produce eye drops to treat infected and painful eyes.<sup>802</sup> In Iraq the plant is used as a stimulating, energizing, purgative, and cooling drug, and for opium mixtures.<sup>803</sup> Among the Jews of Iraq the plant served for treating kidney stones, wounds and skin spots, infections, swellings, and eye diseases. It also enhanced virility and cured abscesses in childbearing women.<sup>804</sup>

## Hypocist

Rape of *Cistus*, *Cytinus hypocistis* (Rafflesiaceae), **A:** **ṭarāthith, shanj**<sup>805</sup>

**D&H:** Mediterranean plant, parasitic, usually on species of rockroses (soft hairy—*Cistus incanus*, and sage leaved—*Cistus salvifolius*). Flowers are red and yellow, similar to pomegranate fruits. The flowers cleaved from ground in spring.

**PU:** Hypocist features in 2 lists of *materia medica* (T-S NS 321.49; T-S NS 305.69) and in a prescription for unknown uses (T-S Ar.42.152).

**TU:** Hypocist is mentioned in medical books on diarrhoea and indigestion (T-S Ar.43.291), on *materia medica* (T-S AS 179.329), and in other fragments (T-S Ar.38.78; T-S NS 297.48).<sup>806</sup>

**OMU:** Ibn al-Bayṭār writes that hypocist was used to treat spitting blood and chronic diarrhoea, to improve the stomach functioning and

<sup>798</sup> al-Kindi, nos. 166, 218. Discussion and uses by others *ibid.*, p. 332, no. 279; Ibn Sina, p. 369.

<sup>799</sup> al-Biruni, I, p. 300; II, p. 65.

<sup>800</sup> Maimonides, Aphorisms, 21:78.

<sup>801</sup> Ibn al-Baytar, al-Jami, IV, p. 124; Leclerc no. 2059; al-Antaki, pp. 287–288.

<sup>802</sup> Palevitch et al., p. 134.

<sup>803</sup> al-Rawi & Chaakravarty, p. 47, with content of active substances.

<sup>804</sup> Ben-Yakov, detailed references on p. 727.

<sup>805</sup> Issa, p. 67, no.2 Maimonides, Glossaire, nos. 117, 174.

<sup>806</sup> Isaacs & Baker; personal observations and Isaacs' unpublished notes.



abscesses, and menstruation.<sup>807</sup> R. Nathan ben Yoel Falaquera recommends use of hypocist against bleeding and to strengthen the joints.<sup>808</sup>

## Hyssop

*Hyssopus officinalis* (Lamiaceae),<sup>809</sup> **A: zūfā yābis**<sup>810</sup>

**D&H:** Hyssop is a low shrub that grows on walls and rocks. It is square-stemmed with dark green leaves; flowers in the summer with feathery blossoms of blue, purple, or white. The plant grows in Asia, southern Europe, and the Middle East.<sup>811</sup> It was apparently well known in ancient Mesopotamia, where it was used for remedial purposes, and was called ‘zufa’ in Chaldean.<sup>812</sup> Classical medicine also recognized it as *Ussopus*, and according to Dioscorides it was used to treat asthma, coughs, and colds, to eliminate worms, and to drain mucus.<sup>813</sup>

**PU:** Hyssop features in a prescription for unknown uses (T-S NS 194.70).

**TU:** Hyssop is also mentioned in medical books: lexica of *materia medica* (T-S Ar.44; T-S Ar.42.73), pharmacopoeias (T-S NS 34.16; T-S NS 222.21; T-S AS 144.205), quasi-medicine (T-S NS 90.16), a recipe for cold and cough (T-S Ar.11.11), other recipes (T-S Ar.39.115; T-S Ar.40.5; T-S Ar.40.111; T-S NS 90.71), and other medical fragments (T-S Ar.38.18; T-S NS 297.114).<sup>814</sup>

**OMU:** According to al-Kindī, ‘zūfā’ was a component in a medication to reduce fever and to treat malaria.<sup>815</sup> Maimonides states that hyssop is a hot and dry remedy.<sup>816</sup> According to Ibn Rushd, the two varieties ‘al-zūfī’ and ‘al-zūfā’ are one and the same. It is a plant with a slender, square stem and leaves like the thin ‘za’tar’ leaves, which is called ‘al-yābis’ (the dry) of the mountain and garden variety. It contains strong properties that are beneficial to the chest and lungs, for chronic coughs and for the stomach. It is used in some villages in Syria and the Lebanon.<sup>817</sup>

<sup>807</sup> Ibn al-Baytar, al-Jami, IV, p. 105.

<sup>808</sup> Amar & Buchman, p. 192.

<sup>809</sup> Issa, P. 73, no. 13; Maimonides, Glossaire, nos. 136, 267.

<sup>810</sup> Issa, p. 97, no. 10. Additional names in al-Biruni, I, pp. 170–171.

<sup>811</sup> Loewenfeld & Back, pp. 149–152; Hooper, p. 128; Uphof, p. 278.

<sup>812</sup> al-Kindī, p. 277, no. 131.

<sup>813</sup> Dioscorides, II.25. The editor identifies it with savory.

<sup>814</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>815</sup> al-Kindī, no. 113. Cf. Ibn Sina, pp. 302–303.

<sup>816</sup> Maimonides, Aphorisms, 9:88. Cf. ‘Zufa ratab’ *ibid.*, 23:49.

<sup>817</sup> Ibn Rushd, no. 102. Cf. Tuhfat, p. 16, no. 141.

Among hyssop's medicinal uses Ibn al-Bayṭār notes its heating property and that it is a component in a medication to eliminate chronic coughs, swelling in the lungs, asthma, colds, and excess mucus and breathing difficulties. The plant also served to soften the stomach, to treat jaundice, to dissolve blood clots in the eyes, to cure diphtheria, and to relieve toothache and earache. From the account of another physician, Ibn Sulaymān, it seems that the plant was also used to treat dropsy, insect bites, and excess tears.<sup>818</sup>

**TM:** A special kind of honey is made by bees from hyssop nectar. The plant is also used in sauces, salads, and soups, in meat dishes and in liqueurs.<sup>819</sup> In Europe hyssop is a component in medications against cough, to reduce swellings, to stabilize blood pressure, and to relieve colds, and to treat sore throat, lung diseases, and the nerves. The plant is also utilized to produce ointment for treating and curing eye, ear, and throat infections, as well as bites and stings.<sup>820</sup> In Iraq and Iran the plant serves as a stimulant and an expectorant, and to cause sweating.<sup>821</sup> The Jews of Iraq used 'zūfā' as a component in various medications to cure eye diseases, coughs, and colds.<sup>822</sup> The plant is also known for its ability to cure heart problems.<sup>823</sup>

**TAI:** From another source, Abu al-Qassam al-Ghassānī, 'zūfā yābis' was apparently gathered in the Jerusalem hills and exported to North Africa.<sup>824</sup>

## Iris

*Iris florentina* or *I. Mesopotamica* (Iridaceae), **A:** ʾīrisā, sūsān, sawsan<sup>825</sup>

**D&H:** Perennial (1 m), with erect stem, sword-shaped leaves and 2–3 resplendent blue to violet flowers per stem.<sup>826</sup> Iris, meaning rainbow in Greek, derives from the colourful look of the flower. The word entered Hebrew as early as Mishnaic times.<sup>827</sup> Dioscorides describes the iris

<sup>818</sup> Ibn al-Baytar, al-Jami, II, pp. 172–173; Leclerc, no. 1136.

<sup>819</sup> Loewenfeld & Back, pp. 149–152; Uphof, p. 278.

<sup>820</sup> Loewenfeld & Back, pp. 149–152; Grieve, p. 426.

<sup>821</sup> Hooper, p. 128.

<sup>822</sup> Ben-Yakov, pp. 92, 165, 295, 317.

<sup>823</sup> In detail, including content of substances, in Uphof, p. 278.

<sup>824</sup> al-Ghassani, p. 105.

<sup>825</sup> Dinsmore & Dalman, no. 1643; Issa, p. 100; Maimonides, Glossaire, no. 272.

<sup>826</sup> Chevallier, p. 222.

<sup>827</sup> Plants & Animals, XI, p. 242.

(*Xuris*) and notes its names and medical uses, for example, to treat wounds, infections, and spasms, as well as diseases of the intestines and of the spleen.<sup>828</sup> Mesopotamian iris is found in abundance in graveyards in the Levant. Since the description of the plant ‘Irisa’ in medieval sources corresponds to the form of the plant and to its habitat, it seems that writers intended to indicate this species.

**PU:** Iris roots feature in 2 prescriptions (T-S NS 194.70), one of which was written by Maimonides (T-S Ar.30.286); iris oil is found as well (T-S NS 194.70).

**TU:** Iris is also mentioned in general medical books (T-S Ar.39.161; T-S Ar.40.68; T-S Ar.40.162 [oil in recipes for convulsion, tetany, fevers, and colic]; T-S Ar.43.88; T-S Ar.44.130; T-S Ar.44.148; T-S Ar.44.149; T-S NS 90.71; T-S Or.1080.6.15) on dermatology (T-S NS 90.60), on poisons (T-S Ar.41.116), on dentistry (T-S Ar.42.39), on *materia medica* (T-S Ar.39.208; T-S Ar.39.369; T-S Ar.40.60; T-S Ar.44.193; T-S Ar.44.204; T-S AS 167.18; T-S AS 167.17), and in pharmacopoeias (T-S Ar.45.31; T-S NS 222.27; T-S Or.1081.1.6). It also appears in recipes for kidney stone, wounds, ear drops, palpitation, theriac, purgative, emmenagogues, to expel the foetus, to stop excessive lachrymation, to promote eyelash growth (T-S Ar.40.86; T-S Ar.42.199; T-S Ar.43.47; T-S Ar.43.226), and for unknown uses (T-S Ar.42.189); also in a letter about a cure for eye diseases (T-S NS 327.93).<sup>829</sup>

**OMU:** The physician, Assaf describes the ‘irius’, notes its similarity to the gladiola, and lists its medical uses: to treat coughs, phlegm, sleeplessness, stomach pains, stings and bites, loss of virility, women’s ailments, and skin diseases.<sup>830</sup> Elsewhere Assaf sets out more uses: against poisons, snakebite and dog bite, and to treat battle wounds.<sup>831</sup> al-Kindī reports on the use of the ‘sawsan’ oil to treat earache and mouth sores, to cure haemorrhoids, and as one of the components of an enema.<sup>832</sup> Shabbetai Donolo relates that he examined the iris root and used it as a ‘tamruk’ (an external medication).<sup>833</sup> al-Bīrūnī, citing many other physicians, lists the medical uses of ‘īrusā’ including the elimination of moisture,

<sup>828</sup> Dioscorides, III.22. The editor identifies it with the species *Iris Foetidissima*.

<sup>829</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>830</sup> Assaph, IV, 389–390.

<sup>831</sup> Assaph, IV, 402.

<sup>832</sup> al-Kindī, nos. 52, 75, 125, 146. The researcher Levey identified ‘Sussan’ with a species of iris.

<sup>833</sup> Donolo, p. 22.

curing skin diseases, infections, and wounds, and treating many other diseases.<sup>834</sup>

**TM:** Natural medicine makes use of the root stem and flowers of various species of iris. From the root stem prepare purgative and urine releasing substances are prepared, as well as a powder with the smell of violets (*Orris powder*). From the root stem and the flowers are produced ethereal oil and a medication against infections in the breathing tract and the chest.<sup>835</sup> The species *Iris spuria* is used in Iran to treat headaches and to relieve birth pangs,<sup>836</sup> while in Iraq the species *Iris pallida* is used for the cosmetics industry and for medical purposes, mainly to prepare tooth-paste and to treat the teeth of infants.<sup>837</sup> In Egypt *Iris florentina* serves to the present day as an emmenagogue and for cleansing purposes, and it is also a component in ointments.<sup>838</sup> In Europe various species of iris are used in the framework of traditional medicine.<sup>839</sup>

## Jasmine

*Jasminum* sp. (*J. officinale*, *J. sambac*, *J. fruticans*) (Oleaceae), **A:** *yāsamīn*, *rāziqī* (Jasmine oil)<sup>840</sup>

**D&H:** Slender evergreen (6 m), with dark green compound leaves and large, sweetly scented tubular white flowers.<sup>841</sup> In the Middle Ages jasmine oil was produced from *J. sambac* and *J. officinale*.<sup>842</sup> Rabbi Obadiah of Bartenura (16th cent.) describes the custom of drinking wine mixed with jasmine, which grew abundantly in the Land of Israel.<sup>843</sup>

**PU:** Jasmine oil figures in a prescription for eye diseases (T-S AS 159.241).

**TU:** Jasmine is also mentioned in books: for dyeing hair black (T-S Ar.40.121); also in recipes for the treatment of headache (T-S Ar.40.152)

<sup>834</sup> al-Biruni, I, pp. 50–51.

<sup>835</sup> Plants & Animals, XI, p. 242.

<sup>836</sup> Hooper, pp. 130–131.

<sup>837</sup> al-Rawi & Chaakravarty, pp. 54–55, including contents of active substances.

<sup>838</sup> Ducros, p. 104, no. 182.

<sup>839</sup> Uphof, p. 284. On some of these uses see Chizik, pp. 619–621.

<sup>840</sup> Maimonides, Glossaire, no. 181; Issa, p. 101, no. 10; Dinsmore & Dalman, no. 1126; al-Baghdadi, p. 78.

<sup>841</sup> Chevallier, p. 222.

<sup>842</sup> According to al-Qazwīnī, p. 237.

<sup>843</sup> Ya'ari, Letters, p. 114.

and for massaging the gums (T-S AS 177.342r). Jasmine oil appears in a quasi-medical magic formula (with saffron; T-S AS 180.179).<sup>844</sup>

**OMU:** al-Kindī describes jasmine in connection with the treatment of infections. According to him it is also a component in a preparation to increase sexual excitation. ‘Rāziqī’ (jasmine oil) is a component in an ointment to treat haemorrhoids.<sup>845</sup> Ibn Māsawayh recommends rubbing the body with jasmine oil in the month of Adar (March).<sup>846</sup> Maimonides notes that jasmine oil serves as a component in an ointment to be spread on the sexual organs to help in coitus, a component in a medication to stiffen the male sexual organ, and as a component in a pill to improve sexual excitation. The juice of *J. sambac* was used as a medication to sweeten the breath. ‘Yāsamīn’ was considered a hot and dry drug and was used extensively.<sup>847</sup> Ibn al-Bayṭār cites contemporary physicians in connection with its uses: to cure headaches, facial paralysis, colds and wounds; to eliminate phlegm, to strengthen the mind, and to blacken the hair.<sup>848</sup> al-Qazwīnī reports that the fruit of the tree was known, and its flowers are yellow, white, or purple. Ibn Sīnā is cited in connection with jasmine’s medical uses, including removal of freckles and curing pains and phlegm removal by means of its scent, but excess use caused headache and pallor. Others asserted that it was beneficial for people suffering from facial paralysis or partial paralysis of the body and pains of the thigh sinew. Rubbing it in was effective in treating difficulties in urination.<sup>849</sup>

**TM:** In Iraq *J. officinale* serves to cure chest diseases and to soothe the nerves. It also serves as a stimulating drug, an astringent, and a soporific. *J. sambac* is used to treat spasms and headaches, to rinse the eyes, to reduce fever, and is also a component in a facial cream.<sup>850</sup> The Jews of Iraq used ‘yāsamīn’ to relieve respiration.<sup>851</sup>

<sup>844</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>845</sup> al-Kindī, nos. 14, 107, 188. Cf. al-Biruni, I, p. 340; II, p. 105.

<sup>846</sup> Ibn Masawayh, pp. 247, 249–250.

<sup>847</sup> Maimonides, Sexual, Introduction 19; 6:4; 8:1; 12:2; Maimonides, Aphorisms, 21:75.

<sup>848</sup> Ibn al-Baytar, al-Jami, IV, pp. 201–202; Leclerc, no. 2298.

<sup>849</sup> al-Qazwīnī, p. 237.

<sup>850</sup> al-Rawi & Chaakravarty, p. 55; Grieve, pp. 447–449, including content of active substances.

<sup>851</sup> Ben-Yakov, p. 237.

**Jew's mallow**

*Corchorus olitorius* (Tiliaceae), **A:** **malūkhiya**<sup>852</sup>

**D&H:** Tropical domesticated herb, with smooth stem and sharp hairy leaves, yellow flowers, and capsule-like fruit.<sup>853</sup> In ancient Greek the plant was called *Corchorus*, meaning mucus, because of the large amount of mucus in its tissues. It is possibly also mentioned in the Talmud (Jer. Talmud, Shabbat, 86:8a), with Jew's mallow.<sup>854</sup>

**PU:** Jew's mallow features in 3 lists of *materia medica* (T-S Ar.35.82; T-S Ar.39.136; T-S AS 181.193).

**TU:** Jew's mallow also appears in medical books on skin diseases (T-S Ar.42.22), on poisons (T-S Ar.44.77), on *materia medica* (T-S AS 179.329; T-S Or. 1080.4.24) and in others (T-S Ar.41.115).<sup>855</sup>

**OMU:** al-Kindī describes the use of the Jew's mallow to treat head rash. Maimonides notes that the plant is a component in a medication that 'causes sorrow and depression and leads one to excitement and strong desire'. It was considered a moist drug.<sup>856</sup> Ibn al-Bayṭār cites Abū al-ʿAbbās al-Nabātī writing that the plant was well known in Egypt and served for curative purposes.<sup>857</sup>

**TM:** Yemenite Jews commonly used the plant to reduce fever, to treat pains of the head and the eyes, and to cleanse the blood, the liver and the gall bladder.<sup>858</sup> Natural medicine uses of the mucus of the plant to soothe pains and to cure hoarseness and shortness of breath. The oil derived from the seeds is used for food, but excess amounts cause constipation.<sup>859</sup> In Iraq two other species—*Corchorus acutangulus* and *Corchorus capsularis*—are used as medications for intestinal diseases and to treat non-functioning of the liver,<sup>860</sup> and also as a purgative drug, a carminative, a stimulant for the appetite, and to reduce fever.<sup>861</sup>

<sup>852</sup> Maimonides, Glossaire, no. 229. Cf. al-Baghdadi, p. 30. A discussion of identity is in Amar, Production, p. 210; Dinsmore & Dalman, no. 340; Issa, p. 57, no. 16.

<sup>853</sup> Lev & Amar, Ethinc, p. 152.

<sup>854</sup> A discussion of identity is in Amar, Production, p. 284.

<sup>855</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>856</sup> Maimonides, Aphorisms, 20:47; 21:72; Maimonides, Sexual, 5:6.

<sup>857</sup> Ibn al-Baytar, al-Jami, IV, p. 166; Leclerc, 2173. Cf. al-Antaki, p. 324; Ibn Sina, p. 372.

<sup>858</sup> Reiani, p. 18, no. 32.

<sup>859</sup> Krispil, p. 664.

<sup>860</sup> al-Rawi & Chaakravarty, p. 30.

<sup>861</sup> Uphof, pp. 150–151; Hill, p. 30.

**TAI:** Jew's mallow was an important part of the diet of the Genizah society according to various documents.<sup>862</sup> al-Baghdadī (12th cent.) notes that Jew's mallow grew much less in Greater Syria than in Egypt, and various cooked foods were made with it.<sup>863</sup>

### Judas-tree

*Cercis siliquastrum* (Fabaceae),<sup>864</sup> **A:** 'urjuwān<sup>865</sup>

**D&H:** Deciduous Mediterranean tree (8 m), with pink flowers that bear pods.<sup>866</sup> The same Arabic names apply to the purple colour made out of purple sea snail.

**PU:** Judas-tree features in a prescription for unknown uses (T-S Ar. 35.78) and in a list of *materia medica* (T-S Ar.34.341).

**TU:** Judas tree is also mentioned also in a letter containing a personal request for medicinal substances (T-S Ar.43.6) and in a general medical book (T-S AS 179.47).<sup>867</sup>

**OMU:** al-Kindī writes that Judas-tree is used to treat fistula, itching, serious wounds, and cancer.<sup>868</sup> Al-Ghāfiqī mentions the tree as a well known plant growing in Spain. He cites other authorities stating it was used as an astringent and to treat haemorrhoids.<sup>869</sup>

**TAI:** Gil has an entry for the colour 'arjuwān' in his index.<sup>870</sup>

<sup>862</sup> Goitein, Society, IV, pp. 230–233, 245.

<sup>863</sup> al-Baghdadī, p. 30; Goitein, Society, IV, 231. Cf. Leclerc, no. 2173.

<sup>864</sup> According to Maimonides, Glossaire, no. 86; al-Kindī, p. 265, no. 94, the Arabic name for the tree is dāḍi or dāḍin.

<sup>865</sup> Issa, p. 45, no. 26; Grieve, p. 226.

<sup>866</sup> Plants & Animals, X, p. 147.

<sup>867</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>868</sup> al-Kindī, p. 265, no. 94.

<sup>869</sup> al-Ghāfiqī, pp. 488–493, no. 236.

<sup>870</sup> Gil, Kingdom, IV, p. 935.

## Juniper

*Juniperus* sp. [*J. sabina*, *J. drupacea* (Plum juniper), *J. excelsa* (Greek juniper), *J. phoenicea* (Phoenician juniper), *J. oxycedrus* (Prickly juniper)] (Cupressaceae), **A:** ‘ar‘ar<sup>871</sup>

**D&H:** Coniferous shrub or tree (15 m) with slender twigs carrying whorls of needle-like leaves; yellow male and blue female flowers on separate plants, and spherical blue-black fruit.<sup>872</sup> Juniper has been used for curative purposes since early times. Dioscorides, for example, describes six species and lists their medical uses. *Arkeothos megale*, identified with red juniper, and *Arkeothos mikra* served for heating, for curing cough, against intestinal diseases, infections, skin diseases, and snakebite, and to treat problems of the womb. Brathus, identified with *J. sabina*, was a diuretic substance and a component in medical ointments, and was used to cure infections. *Kedros*, also identified with red juniper, was among other things, a purgative and served as to disinfect, to eliminate intestinal worms, to relieve toothache, to cure coughs and dog bites; it was also a component in medications to counteract poisons.<sup>873</sup>

**PU:** Juniper features in a list of *materia medica* (T-S Ar.11.16).

**TU:** Juniper is also mentioned in medical books (T-S Ar.43.98 T-S NS 327.55) on dentistry (T-S Ar.41.30), in a lexicon of *materia medica* (T-S Ar.51.53), and in pharmacopoeias (T-S NS 222.68; T-S NS 222.70; T-S Or.1080.3.39).<sup>874</sup>

**OMU:** Maimonides quotes al-Tamīmī writing that juniper ‘nuts’ served as a component in an external medication, while the nuts and crushed leaves were an internal medicine to treat fractures. It was also used as a component in a medication to regulate menstruation, and was considered a hot and dry drug which had extensive uses.<sup>875</sup> The leaves served as a component in a medication to prevent hair growth in the armpits and the pubis, and to soften the skin in those areas.<sup>876</sup> Ibn al-Bayṭār lists medical uses of the juniper as treating diseases of the heart and the skin, and strengthening eyesight.<sup>877</sup>

<sup>871</sup> Maimonides, Glossaire, no. 22; Issa, p. 102, Nos. 13–17; Dinsmore & Dalman, nos. 1608–1610; Leclerc, nos. 985, 1289, 1402.

<sup>872</sup> Chevallier, p. 223.

<sup>873</sup> Dioscorides, I.103–105.

<sup>874</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>875</sup> Maimonides, Aphorisms, 9:123; 16:2; 21:80. Cf. Ibn Sina, pp. 248–249.

<sup>876</sup> Maimonides, Sexual, 14.

<sup>877</sup> Ibn al-Baytar, al-Jami, I, p. 2; Leclerc, no. 7. Cf. al-Biruni, I, p. 15.



**TM:** Different juniper species around the world have served in the past and still serve today as a source for medicinal substances originating in the oils produced from the resin of the tree, its wood, fruits, and leaves. The tree contains substances such as tannin, and organic acids.<sup>878</sup> Among the medical properties of the juniper species are regulating menstruation, increasing urination and sweat, cleansing the blood and the urinary tract, curing oedema of the stomach, and strengthening the stomach.<sup>879</sup> The sweet fruit of Greek juniper and the oil produced from its seeds served in India and Iran as diuretic substances, to regulate menstruation, and as a medicine for problems of the intestines and stomach.<sup>880</sup> Prickly juniper is a source for producing ‘cedar oil’ used for destroying parasites, as a disinfectant, and to treat skin diseases.<sup>881</sup> The fruits of the Greek juniper and the oil produced from them serve as diuretic substances, to regulate menstruation, and as a medicine to treat problems of the stomach and intestines. The leaves served in Asia as a perfume.<sup>882</sup> Plum juniper serves as a diuretic, improves digestion, dispels gases, soothes the stomach, stimulates, regulates heart activity, and cures diseases of the respiratory tracts.<sup>883</sup>

**TAI:** According to al-Dimashqī, juniper was one of the 90 species of drugs that grew in Mount Lebanon from whose gathering one could make a living.<sup>884</sup>

## Kermes

*Kermes* sp. (Kermesidae), **A:** **qirmiz**

**D&H:** Group of insects that grow almost exclusively on oak trees, mainly *Quercus coccifera*, that grow wild in Mediterranean Europe. This tree is called Kermes oak because it hosts *Kermes vermilio* = *Kermococcus vermilis*. The female aphid is a legless parasite that grows to the size of pea

<sup>878</sup> Loewenfeld & Back, p. 152; Uphof, pp. 290–291; Culpepper, p. 204.

<sup>879</sup> Chizik, p. 731.

<sup>880</sup> Hooper, p. 292.

<sup>881</sup> Uphof, p. 291; Morton, pp. 27–29; al-Rawi & Chaakravarty, p. 56, with content of substances.

<sup>882</sup> Uphof, p. 290; Hooper, p. 131.

<sup>883</sup> al-Rawi & Chaakravarty, p. 56, with contents of active substances; Grieve, pp. 452–453.

<sup>884</sup> al-Dimashqī, p. 199.

in the spring. The female and its eggs are collected for the production of crimson dye.<sup>885</sup>

**PU:** Kermes appear in a prescription for unknown uses (T-S Ar.39.318).

**TU:** Not yet found.

**OMU:** Ibn al-Baytār cites al-Idrīsī regarding the medical uses of kermes: among other things it was used to treat fever, as a contraceptive, and to stop menstruation.<sup>886</sup>

**TM:** The Swiss physician Titus Tobler recorded the existence of kermes as medicinal substances in the markets of 19th-century Jerusalem.<sup>887</sup>

**TAI:** Spanish kermes was ordered from Cairo by a Jerusalem merchant.<sup>888</sup> Other Genizah documents deal with its trade in Egypt, Tunisia, and other Mediterranean locations.<sup>889</sup>

## Laurel

Sweet Bay, *Laurus nobilis* (Lauraceae), **A: ghār, rand**<sup>890</sup>

**D&H:** Aromatic evergreen shrub or tree (20 m), with dark green leaves, small yellow flowers, and shiny black berries.<sup>891</sup> The laurel frequently appears in folklore. According to legend, the god Apollo chose the tree as his personal symbol; the prophetesses (sibyls) of Delphi chewed the leaves in order to enter into a prophetic trance; and the victors of the Olympic Games were crowned with a wreath of laurel leaves. Classical physicians describe the tree and indicate its uses. Pliny describes its warm character and its ability to cure various diseases such as eye diseases, stings, and bites. Dioscorides, in his entry 'Daphne', notes that the leaves were used as a medicine against the stings of bees, scorpions, and wasps, to treat infections and diseases of the liver, and to soothe earache.<sup>892</sup> Over the course of history it has been used to cure cancer of the liver, the intestines, and the spleen.<sup>893</sup>

<sup>885</sup> Amar, Kermes.

<sup>886</sup> Ibn al-Bytar, al-Jami, IV, p. 14.

<sup>887</sup> Tobler, Beitrage, p. 15.

<sup>888</sup> Gil, III, p. 107, no. 460.

<sup>889</sup> Gil, Kingdom, II, p. 640, no. 219, III, p. 1000, no. 604, Goitein, Society, IV, p. 173.

<sup>890</sup> Maimonides, Glossaire, no. 404; Dinsmore & Dalman, no. 1531; Issa, p. 103, no. 20.

<sup>891</sup> Chevallier, p. 224.

<sup>892</sup> Dioscorides, I.106.

<sup>893</sup> Hartwell, p. 292.

**PU:** Laurel figures in 3 lists of *materia medica* (T-S Ar.35.328; T-S AS 177.227), likewise laurel seeds (mentioned twice; T-S Ar.35.229). It is also mentioned in 2 prescriptions: for a purgative (T-S Ar.39.458) and for linctus and ointment (T-S AS 147.192).

**TU:** Laurel is also mentioned in medical books (T-S Ar.11.34; T-S Ar.40.5; T-S Ar.42.167; T-S Ar.43.252) on ophthalmology (T-S Ar.39.351), on dermatology (T-S Ar.90.66; T-S NS 306.93), on poisons (T-S Ar.41.116), on *materia medica* (T-S Ar.43.191; T-S Ar.44.204), and in pharmacopoeias (T-S NS 222.67; T-S NS 222.68). It also appears in recipes for indigestion, haemorrhoids, palpitations, and looseness of the bowels and fevers (T-S Ar.44.187; T-S NS 90.47), and in a contract for the lease of a shop belonging to a religious trust [‘waqf’] to a Jewish pharmacist (Ishāq al-Yahūdī al-‘Aṭṭār; T-S Ar.39.356).<sup>894</sup>

**OMU:** The physician Assaf describes oil of laurel, which was considered a hot and dry drug and was used to treat pains in the liver, spleen, and kidneys, to heat the urinary tract, and ‘beneficial for snakebites and for all poisons.’<sup>895</sup> al-Kindī describes the use of laurel oil to heat the kidneys, and of the seeds of the tree to prepare a medication to destroy worms, to cleanse the air, and to treat contagious diseases.<sup>896</sup> Maimonides reports the use of the seed to prepare the ‘great theriac’. Elsewhere he notes the use of the plant in a drug that causes urine flow and opens stone obstructions in the urinary tract. The plant was a hot and dry drug.<sup>897</sup>

**TM:** The Arabs of Israel use the leaves of the laurel tree (bay leaves) to strengthen the hair, to dispel sweat odour, to cure colds and general weakness, and to stop diarrhoea and vomiting in infants. The oil produced from the fruit (berries) is used to soothe rheumatic and nerve pains, to soften the skin, and to cure wounds. Eating the fruit immunizes against poisoning.<sup>898</sup>

<sup>894</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>895</sup> Assaph, IV.399.

<sup>896</sup> al-Kindī, nos. 146, 219.

<sup>897</sup> Maimonides, Poisons, p. 113; Maimonides, Aphorisms, 21: 65, 85.

<sup>898</sup> Palevitch et al., p. 124, with reference to similar uses in other countries of the region and content of active substances. See also Krispil, pp. 952–953.

**Leek**

*Allium porrum* (Alliaceae), **A:** **kurrāth**<sup>899</sup>

**D&H:** Strong and tall domesticated edible annual herb, with long, flat and wide leaves; the bulb is white, long, and not dry like the onion.<sup>900</sup>

In ancient Babylonia the leek was used to treat the roots of teeth and problems of the womb, the stomach, and the skin.<sup>901</sup> The Jewish Sages frequently mention the plant; it was used to cure liver diseases, jaundice, and intestinal problems, and also to eliminate worms, to cure constipation, and to reduce fever.<sup>902</sup> Dioscorides describes *Prason*, noting that it serves to stop haemorrhages and to treat throat diseases, snakebite, earache, and ulcers.<sup>903</sup> The leek was a well known and important agricultural crop in the Land of Israel in the Middle Ages.<sup>904</sup>

**PU:** Leek and its water feature in 4 prescriptions (T-S Ar.41.81; T-S Ar.39.184; T-S AS 173.3; T-S AS 148.27).

**TU:** Leek is also mentioned in medical books (T-S Ar.42.175; T-S Ar.43.138; T-S NS 306.25; T-S NS 306.172; T-S NS 164.80) and others on diarrhoea and digestion problems (T-S Ar.43.291; T-S AS 155.64), on ophthalmology (T-S Ar.43.76; T-S Ar.43.166), on dermatology (T-S Ar.43.114), on dentistry (T-S Ar.41.30), on poisons (T-S Ar.41.116), on *materia medica* (T-S Ar.42.73; T-S Ar.44.76; T-S Ar.44.90; T-S AS 177.407), in pharmacopoeias (Nabatean leek in a recipe [powder] to treat diarrhoea and strengthen the muscles of the stomach, T-S Ar.40.180; T-S Ar.45.19; T-S AS 222.2; T-S Or.1080.3.39), in quasi-medicine (T-S Ar.11.17), and in other fragments (T-S Ar.44.128; T-S NS 297.88; T-S Or.1080.14.47; T-S AS 228.14), some for unknown uses (T-S Or.1081.J.71).<sup>905</sup>

**OMU:** al-Kindi reports on the use of leek to treat headaches and haemorrhoids.<sup>906</sup> According to Maimonides, leek was a hot and dry drug, a food that was easy to digest, strengthened, cleansed the respiratory organs from bad phlegm, and was a component in a medication against leprosy.

<sup>899</sup> Maimonides, Glossaire, no. 198; Dinsmore & Dalman, no. 1681.

<sup>900</sup> Plants & Animals, XII, p. 81.

<sup>901</sup> al-Kindi, p. 323, no. 255.

<sup>902</sup> In detail in Feliks, Plants, p. 87.

<sup>903</sup> Dioscorides, II.179.

<sup>904</sup> A selection of sources and identifications is in Amar, Production, pp. 278–279.

<sup>905</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>906</sup> al-Kindi, nos. 29, 148. Cf. Ibn Sina, p. 347.

In his book on sexual life, Maimonides describes the use of the leek as a medicine to prevent the growth of pubic hair and armpit hair, and to soften the skin.<sup>907</sup>

**TM:** The plant serves as a sauce, and in the food industry as a component in soup mix. Its nutritional value is similar to that of the garden onion.<sup>908</sup> Among the Jews of Iraq it was used in treating various medical problems such as renewed menstruation, increasing the quantity of mother's milk, treating excessive gases, fissures in the anus, and back pains.<sup>909</sup>

### Lemon-grass

*Andropogon schoenanthus* (= *Cymbopogon parkeri*) (Poaceae), **A:** **’idhkhir**<sup>910</sup>

**D&H:** Perennial grass growing wild in dry habitats and makes staple fodder for camels. The leaves smell lemon-like, and a fragrant oil, which was used for medicine, is made from them.

**PU:** Lemon-grass oil features in 2 prescriptions (powder; T-S Ar.40.87), likewise lemon-grass itself (T-S Ar.42.152), both for unknown uses.

**TU:** Lemon-grass is also mentioned in medical books (T-S Ar.40.104; T-S Ar.40.157; T-S Ar.40.160; T-S Ar.44.148; T-S Ar.44.149; T-S NS 90.71) on ophthalmology (T-S Ar.43.166), on *materia medica* (T-S Ar.44.204; T-S Ar.44.218), in pharmacopoeias (T-S Ar.45.33; T-S NS 222.69; T-S NS 222.70; T-S NS 222.43; T-S AS 166.126), and in other fragments (T-S Ar.39.472; T-S Or.1080.13.12). It also appears in recipes for palpitation, purgative, stomach ailments, liver disease, colic, a general tonic (T-S Ar.42.199; T-S Ar.43.320; T-S Ar.45.28; T-S Ar.45.40), and unknown uses (T-S AS 179.328), and in a recipe booklet (T-S NS 327.90).<sup>911</sup>

**OMU:** The Arabs used lemon-grass in cataplasms for stomach tumours. al-Kindi writes that it was used to treat kidney problems.<sup>912</sup> Ibn al-Bayṭar cites other authorities that the roots were used for fever.<sup>913</sup> R. Nathan

<sup>907</sup> Maimonides, Aphorisms, 8:25; 9:108; 20:49; 21:85; Maimonides, Regimen, 11:11; Maimonides, Sexual, 14.

<sup>908</sup> Plants & Animals, XII, p. 81; Uphof, p. 25; Hill, p. 372.

<sup>909</sup> Ben-Yakov, pp. 130, 159, 206, 239, 348.

<sup>910</sup> Issa, p. 16, no. 16; Maimonides, Glossaire, no. 8.

<sup>911</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>912</sup> al-Kindi, pp. 225–226, no. 2.

<sup>913</sup> Ibn al-Baytar, al-Jami, I, p. 15.

ben Yoel Falaquera recommends the use of the flowers to treat bleeding and the root for diseases of the stomach and kidney stones.<sup>914</sup>

**TM:** In modern Egypt it is used as diuretic, emmenagogue, and astringent, and as heating agent.<sup>915</sup>

## Lentil

*Lens esculenta* (Fabaceae), **A:** ‘*adas*<sup>916</sup>

**D&H:** Annual hairy plant which produces edible seeds. It has small feathery leaves and tendrils, small white leaves, and small pods, each containing two seeds. It has been known as an edible plant since Biblical times (Gen. 25, 34).

**PU:** Lentil figures in 4 prescriptions: for unknown uses (T-S Ar.39.184; T-S Ar.39.451; T-S NS 327.97) and for the treatment of lice (T-S Ar.43.54).

**TU:** Lentil is also mentioned in medical books (T-S Ar.11.13; T-S Ar.40.121; T-S Ar.41.134; T-S Ar.43.98; T-S Ar.43.138; T-S Ar.44.130) on dermatology (T-S Ar.43.231; T-S NS 90.60), on paediatrics (T-S Ar.45.20), on sex (T-S Ar.44.79), on dentistry (T-S Ar.42.39), on inflammation (T-S Ar.44.91), M.M (T-S Ar.44.76; T-S Or.1080.2.74), in pharmacopoeias (T-S Ar.41.96; T-S Or.1080.3.39), in recipes for headache, loss of teeth, winds, warts, dysuria, swellings, and eye diseases (collyria; T-S Ar.39.20; T-S Ar.42.152; T-S Ar.44.30; T-S NS 306.77), and in other fragments (T-S Or.1080.13.34).<sup>917</sup>

**OMU:** al-Kindī writes that lentils are used to treat toothache and in a sternutative for an enlarged head and in a musk recipe.<sup>918</sup> Ibn al-Baytār cites Ibn Sīnā that lentils retard urination and arrest the flow of blood.<sup>919</sup> R. Nathan ben Yoel Falaquera recommends the use of lentil for of dropsy and chicken pox.<sup>920</sup>

**TM:** In modern Iraq it is used by women to facilitate parturition.<sup>921</sup>

<sup>914</sup> Amar & Buchman, p. 153.

<sup>915</sup> Ducros, p. 1, no. 1.

<sup>916</sup> Issa, p. 107, no. 1.

<sup>917</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>918</sup> al-Kindī, p. 302, no. 192.

<sup>919</sup> Ibn al-Baytār, al-Jami, III, pp. 116–117.

<sup>920</sup> Amar & Buchman, p. 137.

<sup>921</sup> Hooper, p. 136.

**TAI:** According to several Genizah documents it was among the common foodstuffs in medieval Egypt and of the Genizah society,<sup>922</sup> and was exported to North Africa.<sup>923</sup>

### Leopard's bane

Doronicum, panther strangler, *Doronicum scorpioides* (Asteraceae),  
**A: darwanj**<sup>924</sup>

**D&H:** Dioscorides describes *Akoniton*, sometimes also called *Pardalianches*, which is identified with the species *Doronicum pardalianches*. Among the uses recommended for it are treatment of scorpion stings and eye diseases, and as a poison (bane) to trap beasts of prey such as leopards and wolves.<sup>925</sup>

**PU:** Leopard's bane features in a list of *materia medica* (T-S Ar.35.328) and in 3 prescriptions (T-S Ar.43.338; T-S AS 182.242). Leopard's bane of Iraqi origin is mentioned in a prescription for a powder (T-S Ar.40.87).

**TU:** Leopard's bane is also mentioned also in medical books (T-S Ar.40.5; T-S Ar.43.320; T-S Ar.44.149), in lexica of *materia medica* (T-S Ar.39.443; T-S AS 182.242; T-S Ar.44.204), and in pharmacopoeias (T-S Ar.42.199; T-S Ar.43.98; T-S Ar.44.187; T-S Or.1080.3.39; T-S NS 222.25).<sup>926</sup>

**OMU:** According to al-Kindī the plant is a component in an eye ointment.<sup>927</sup> For Maimonides it is a component in a medication to eliminate the desire for coitus. The plant is defined as a hot and dry drug.<sup>928</sup>

**TM:** In Iraq and Iran the substance extracted from the root of various types of leopard's bane, which resembles a scorpion's tail, serves as a poison and as a medication for depression, nerve diseases, and scorpion stings (according to the theory of correspondences).<sup>929</sup> The Jews of Iraq used the plant in a medication to strengthen virility.<sup>930</sup>

<sup>922</sup> Goitein, *Society*, IV, p. 233.

<sup>923</sup> Gil, *Kingdom*, IV, p. 16, no. 614, p. 26, no. 614.

<sup>924</sup> Maimonides, *Glossaire*, no. 81; Issa, p. 72, no. 6; Amar, *Ibn al-Baytar*, p. 60, n. 35.

<sup>925</sup> Dioscorides IV.77.

<sup>926</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>927</sup> al-Kindī, nos. 154, 205.

<sup>928</sup> Maimonides, *Regimen*, p. 98; Maimonides, *Aphorisms*, 21:80; Maimonides, *Sexual*, 5:5.

<sup>929</sup> Hooper, pp. 113–114; Uphof, p. 187.

<sup>930</sup> Ben-Yakov, p. 215.

**TAI:** al-Ghāfiqī cites an anonymous source indicating that the best leopard's bane species originated in Persia, and the next best in quality was the 'Shāmī' (Syrian) species.<sup>931</sup> Ibn al-Bayṭār reports that the plant is prolific and in the districts of the al-Shām region, especially in the Beirut mountains. The part that is used is the root, which has the shape of a scorpion's tail, is bitter to the taste, and very slightly aromatic. The plant is also found in abundance in the mountainous regions of Spain. It is used mainly to reduce swellings and also as a poison against insects and venomous reptiles.<sup>932</sup>

## Lettuce

*Lactuca sativa* (Asteraceae), **A:** **khass**<sup>933</sup>

**D&H:** Annual vegetable that originated in the eastern Mediterranean. The yellow flowers top a tall stalk and the dense leaves are eaten. Juice was made out of them and the seeds were used for medicine.

**PU:** Lettuce features in 2 prescriptions for linctus and ointment (T-S AS 147.192). Lettuce, together with as lemon and milk, are mentioned as used to treat eye diseases in a 12th century Genizah letter (T-S 24.72).<sup>934</sup>

**TU:** Lettuce is also mentioned in medical books (T-S Ar.40.160 [umbilical hernia and incessant crying of children]; T-S Ar.42.68; T-S Ar.42.167; T-S Ar.44.51; T-S Ar.44.130; T-S AS 180.59), on dentistry (T-S Ar.41.30), on sex (T-S Ar.44.79), on dermatology (T-S Ar.42.22; T-S Ar.43.114), on poisons (T-S Ar.41.116), on *materia medica* (T-S Ar.42.73; T-S Ar.44.76; T-S NS 164.30, T-S Or.1080.2.74), in pharmacopoeias (T-S NS 305.116 [jaundice with acute fever and palpitation]), in recipes for eye diseases (T-S NS 306.48), and in other fragments (T-S Ar.38.68; T-S NS 90.26).<sup>935</sup>

**OMU:** The plant was used to improve mother's milk production, to reduce sexual lust, and for the treatment of headache.<sup>936</sup>

<sup>931</sup> al-Ghāfiqī, no. 242, with additional sources in the editor's note.

<sup>932</sup> Ibn al-Baytar, al-Jami, II, 90; Leclerc, no. 862.

<sup>933</sup> Issa, p. 103, no. 26.

<sup>934</sup> Goitein, Jewry, p. 270.

<sup>935</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>936</sup> Lev & Amar, Ethnic, p. 112.



**TM:** Oil pressed out of lettuce seeds is used to strengthen the hair and treat hair ailments.<sup>937</sup>

## Lichen

*Usnea* sp. (Parmeliaceae), **A:** 'ushna<sup>938</sup>

**D&H:** Lichen, a symbiosis of an alga and a fungus, is an organism with a unique manner of survival. The wide range of lichens' shapes and their diverse chemical structures led humans to use them for medicine from early ages. Among the medicinally used lichen are *Evernia furfuracea*, used for mummifying in ancient Egypt, and *Usnea barbata*, used to treat obstruction in urinary tracts, to increase hair growth (against baldness), and to increase salivation.<sup>939</sup>

**PU:** Lichen features in 2 lists of *materia medica* (T-S Ar.39.136; T-S AS 176.22), and in a prescription for eye diseases (T-S NS 306.48), copied, according to Isaacs, with some variation from 'Alī b. 'Īsā's *Tadhkirat al-Kaḥḥālīn* (ed. Hyderabad, p. 347).

**TU:** Lichen is also mentioned in medical books in recipes for the treatment of: colds and coughs (attributed to Galen; T-S Ar.11.11), and for unknown uses (T-S Ar.41.90), one of which was extracted, according to Isaacs, from al-Kindī's *Kitāb kimmiyā al-'iṭr* (The book of the chemistry of perfume; T-S Ar.41.29).<sup>940</sup>

**OMU:** Ibn Sinā recommends the use of lichen for the treatment of swellings, to soften furuncles, against stiffness of the joints, to improve eyesight, to regulate the heartbeat, to strengthen the stomach, to open womb obstructions, to expel the menses, to ease liver and womb pains, to prevent vomiting and as an anaesthetic.<sup>941</sup> R. Nathan ben Yoel Falquera recommends the plant to treat heart diseases, to improve the eyesight, as an anaesthetic (soaked in wine), and to prevent vomiting.<sup>942</sup>

<sup>937</sup> Lev & Amar, *Ethnic*, p. 112.

<sup>938</sup> Issa, p. 121, no. 10.

<sup>939</sup> *Plants & Animals*, IX, p. 181.

<sup>940</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>941</sup> Ibn Sina, I, p. 249.

<sup>942</sup> Amar & Buchman, p. 154.

**TAI:** The will of an 11th-century Jewish merchant in Cairo mentions lichen as one of the substances in his possession.<sup>943</sup> Lichen was also used, according to a Genizah fragment, to ferment wine and bread.<sup>944</sup>

## Linseed

Flax, *Linum usitatissimum* (Linaceae), **A:** *kattān*<sup>945</sup>

**D&H:** Fibrous plant, annual, which originated in the Mediterranean region. A small upright plant with blue-purple flowers. The seeds are flat, brown, and consist of up to 40% oil. The plant was used in the textile industry in Egypt and the Levant.<sup>946</sup>

**PU:** Linseed features in 3 prescriptions (T-S NS 194.70), likewise its seeds [twice; T-S NS 194.70] and oil (T-S NS 194.70), all for unknown uses.

**TU:** Linseed is also mentioned in medical books: in a recipe for unknown uses (a 'rob' and an electuary; T-S NS 34.16r) and as a simple in lexica of *materia medica* (T-S AS 87.77; T-S AS 87.99; T-S AS 88.10; T-S AS 183.106). Linseed mucilage is included in a recipe for the preparation of lozenges (T-S Ar.11.13r) and linseed oil is found in a recipe (embrocation; T-S AS 168.190) and in another for convulsion and tetany, fevers, and colic (T-S Ar.40.162).<sup>947</sup>

**OMU:** Maimonides describes the qualities of the linseed as hot and dry.<sup>948</sup> R. Nathan ben Yoel Falaquera recommends the use of linseed for the treatment of chicken pox, skin diseases, and stomach ailments; the seeds toasted were used for the treatment of coughs and mucous.<sup>949</sup>

**TAI:** Flax was an important commodity and there is plenty of evidence, especially concerning flax textile products, of its trade in the medieval Mediterranean.<sup>950</sup>

<sup>943</sup> Gil, Kingdom, III, p. 75, no. 327.

<sup>944</sup> Goitein, Society, IV, p. 260.

<sup>945</sup> Issa, p. 109, no. 21.

<sup>946</sup> Feliks, World, pp. 279–284.

<sup>947</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>948</sup> Maimonides, Aphorisms, 21:71.

<sup>949</sup> Amar & Buchman, pp. 185–186.

<sup>950</sup> Goitein, Society; IV, pp. 165–167; Ben-Sasson, pp. 725–726 (more than 100 documents are entered in the index); Gil, Kingdom, IV, p. 937 (more than 200 documents are entered in the index).

## Litharge

Lithargyrum [PbO], **A:** **martak**<sup>951</sup>

**D&H:** Lead oxide. Dioscorides believed litharge to have the property of repressing excrescences of flesh and of cicatrizing, of being a medicine for the eyes, for bad scars, and for spotted and wrinkled faces.<sup>952</sup> It is termed ‘martaka’ by the Jewish Sages (Bab. Talmud, Gitin, 69b).

**PU:** Litharge features in a list of *materia medica* (T-S Ar.39.487) and in a prescription for unknown uses (T-S NS 265.62).

**TU:** Litharge is also mentioned in medical books (T-S Ar.11.13), on ophthalmology (T-S Ar.43.76; T-S AS 179.235 [recipe for lippitude, inversion and lice of the eyelids]), on dermatology (T-S NS 90.66), in pharmacopoeias (T-S AS 182.298), and in recipes for theriac (T-S Ar.42.199).<sup>953</sup>

**OMU:** al-Tamīmī notes the use of litharge for the treatment of eye diseases.<sup>954</sup> al-Kindī applies it repeatedly in his recipes for swollen sores, scrofula, vitiligo alba, boils, abscesses, haemorrhoids, dirty wounds, and eye diseases.<sup>955</sup> Ibn al-Bayṭār cites al-Rāzī stating that whenever eaten litharge provokes vomiting.<sup>956</sup>

**TM:** Litharge is used in traditional medicine in Jordan for the treatment of eye diseases and inflammations.<sup>957</sup>

**TAI:** Litharge was traded by the Genizah people and is mentioned in merchants’ letters in reference to Cairo, Alexandria, and Mahdiyya.<sup>958</sup>

## Lovage

*Levisticum officinale* (Apiaceae), **A:** **kāshim barrī**<sup>959</sup>

**D&H:** Perennial (2 m), with glossy, toothed compound leaves, greenish-yellow flowers, and tiny oval seeds.<sup>960</sup> Dioscorides deemed lovage effec-

<sup>951</sup> Maimonides, Glossaire, no. 239.

<sup>952</sup> Dioscorides, V.102.

<sup>953</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>954</sup> Amar & Seri, p. 114.

<sup>955</sup> al-Kindi, pp. 334–335, no. 285.

<sup>956</sup> Ibn al-Bytar, al-Jami, IV, p. 150.

<sup>957</sup> Lev & Amar, Jordan.

<sup>958</sup> Gil, Kingdom, IV, p. 143, no. 645; Ben-Sasson, p. 43, no. 8.

<sup>959</sup> Maimonides, Glossaire, no. 203, Issa, p. 108, no. 14, Amar & Buchman, p. 197.

<sup>960</sup> Chevallier, p. 226.

tive for digestive ailments, oedema, continence of urine, and coughs, and as a drug for earache.<sup>961</sup>

**PU:** Lovage is found in a prescription (T-S AS 173.3).

**TU:** Lovage is also mentioned in general medical books (T-S Ar. 41.118; T-S Ar.44.204).<sup>962</sup>

**OMU:** al-Kindī employed lovage for chronic and coughs and earache.<sup>963</sup> Ibn al-Bayṭār cites al-Rāzī stating it is good for bruises and that it provokes a headache; also Galen who prescribed it for the intestines and dropsy.<sup>964</sup> R. Nathan ben Yoel Falaquera recommends lovage for the treatment of stomach ailments. It also expels worms and induces menstruation.<sup>965</sup>

**TM:** In modern Egypt the seeds, which are imported from India, are used as a laxative, a diuretic, an emmenagogue, and a cough reliever.

## Madder

Dyer's Madder, *Rubia tinctoria* (Rubiaceae), **A:** **fūwa**<sup>966</sup>

**D&H:** Evergreen perennial (1 m), with whorls of finely toothed lance-shaped leaves, greenish-white flowers and black berries containing two seeds.<sup>967</sup> The Hebrew name of the genus appears in the Bible as a personal name (e.g., Genesis 46:13; Judges 10:1).<sup>968</sup> Classical physicians such as Pliny describe the use of the plant to produce dye and to treat jaundice. Dioscorides describes the plant *Eruthrodanon*, especially its red roots which were used to produce red dye. According to him the plant was grown in the land of 'Anatalia'. The red root is thin and long and is used to induce the flow of urine mixed with blood, to regulate menstruation, to cause abortion, to relieve pains in the thigh sinew and hip, and to cure partial paralysis and skin diseases. The branches and leaves were effective in treating snakebite, and its fruits to reduce swelling of the spleen and to cleanse the liver.<sup>969</sup>

<sup>961</sup> Dioscorides, III.58.

<sup>962</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>963</sup> al-Kindi, p. 320, no. 246.

<sup>964</sup> Ibn al-Baytar, al-Jami, IV, p. 44.

<sup>965</sup> Amar & Buchman, p. 197.

<sup>966</sup> Issa, p. 157, no. 17; Dinsmore & Dalman, no. 822.

<sup>967</sup> Chevallier, p. 261.

<sup>968</sup> Discussion in Feliks, World, p. 301.

<sup>969</sup> Dioscorides, III.160; Cameron.

**PU:** Madder features in 3 prescriptions for unknown uses (T-S Ar.40.53, T-S NS 327.97; T-S AS 173.3) and in a list of *materia medica* (T-S Ar.39.450).

**TU:** Madder is also mentioned in medical books (T-S Ar. T-S Ar.40.104; T-S Ar.40.111), on dermatology (T-S NS 90.66), on *materia medica* (T-S Ar.44.204; T-S NS 222.43; T-S AS 179.70; T-S AS 184.152), in pharmacopoeias (T-S Ar.44.205; T-S Ar.45.19; T-S NS 222.43), and in other fragments (T-S NS 297.115; T-S NS 297.120).<sup>970</sup>

**OMU:** The physician Assaf maintains that the leaves of the plant relieve pains, and dye is derived from its roots, which are also used to treat haemorrhoids and to ease the pangs of childbirth. The roots are also used to accelerate menstruation, and to cure and whiten the teeth.<sup>971</sup> Madder is a hot and dry drug of the highest level.<sup>972</sup> Ibn al-Bayṭār reports that madder cleanses the spleen, liver, and internal organs, cures leprosy, induces urine, and serves as a delicate dye.<sup>973</sup>

**TM:** In Iran and throughout the East the plant serves both as a dyeing and a medicinal substance. It is sold in the markets in its root form (for curative purposes) or in the shape of a ball made of the crushed powder of the root (for dyeing purposes).<sup>974</sup> Among Yemenite Jews madder was widely used for curative purposes. The leaves and stem served to cleanse the liver and spleen, to increase urine flow in the case of blood discharge, to soothe rheumatic pains, to wash the womb, and to treat leprosy.<sup>975</sup> Moroccan Jews used the plant to arouse desire, to increase urination, to cure diarrhoea and jaundice, and to abort the placenta. Tunisian Jews used the root to accelerate menstruation and to relieve backaches.<sup>976</sup> These uses and others were also known in England and Europe in the Middle Ages.<sup>977</sup>

**TAI:** According to the Genizah documents madder was a dye;<sup>978</sup> it was cultivated in Egypt, harvested, and traded, in several cases by Jewish

<sup>970</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>971</sup> Assaph, IV, 401.

<sup>972</sup> Maimonides, Aphorisms, 21:69.

<sup>973</sup> Ibn al-Baytar, al-Jami, III, p. 169; Leclerc, no. 1710. Cf. Ibn Sina, p. 406; al-Biruni, I, p. 255; II, p. 101.

<sup>974</sup> Hooper, pp. 167–168.

<sup>975</sup> Reiani, p. 46, no. 107.

<sup>976</sup> Krispil, p. 1000.

<sup>977</sup> Culpepper, p. 220; Grieve, pp. 504–505; Sigerist, Madder.

<sup>978</sup> Goitein, Society, I, p. 406 and see Indices.

merchants.<sup>979</sup> From various Crusader sources it seems that madder served as a condiment and as a dye that was traded and used in the region.<sup>980</sup> The plant originated in the East, and was sometimes cultivated in the region of Damascus and the Orontes River. In a customs duty list from Acre, madder is included among the dyes that were traded in commercially.<sup>981</sup>

### Maidenhair

Venus hair-fern, Capillaire, *Adiantum capillus-veneris* (Adiantaceae),  
**A:** kuzbarat al-bi'r, barshiyānā, barshiyāwushān<sup>982</sup>

**D&H:** Fern with delicate fronds growing to 30 cm long.<sup>983</sup> Dioscorides describes the use of the *Adianton* to cure asthma and dysentery, to eliminate stones in the urinary tract, to strengthen the stomach, to cure bites and stings, to accelerate menstruation, to stop haemorrhages, and to strengthen the hair.<sup>984</sup>

**PU:** Maidenhair appears in a list of *materia medica* (T-S Ar.43.315) and in 2 prescriptions: for an aphrodisiac (T-S NS 164.159) and for cough (T-S K25.116).

**TU:** Maidenhair is also mentioned in books (T-S Ar.40.78; T-S Ar.42.167; T-S Ar.43.265), on *materia medica* (T-S Ar.41.130; T-S Ar.41.133; T-S Ar.43.191; T-S Ar.44.204; T-S NS 224.146; T-S AS 150.136), in pharmacopoeias (T-S NS 222.28), one on treatment for splitting and falling hair: the ointment to be used on shaved head (T-S NS 222.28r), and in other fragments (T-S AS 181.57).<sup>985</sup>

**OMU:** According to Maimonides, the plant was a component in a purgative medication. It was a mild purgative and a medicine for snakebite.<sup>986</sup> Ibn al-Bayṭār records the synonyms for the plant and describes the medical uses according to classical and Arab physicians: to eliminate worms, too dissolve stones in the urinary tract, to promote hair growth, as an

<sup>979</sup> Gil, Kingdom, II, p. 565, no. 191, p. 569, no. 193, III, p. 101, no. 335, p. 349, no. 397, p. 481, no. 446.

<sup>980</sup> Praver, Jerusalem, II, pp. 125–126; Praver, Colonial, p. 471.

<sup>981</sup> Beugnot, II, 237–238.

<sup>982</sup> Maimonides, Glossaire, no. 182; Dinsmore & Dalman, no. 1999; Issa, p. 6, no. 1.

<sup>983</sup> Chevallier, p. 158.

<sup>984</sup> Dioscorides, IV.136.

<sup>985</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>986</sup> Maimonides, Aphorisms, 9:88; Maimonides, Regimen, 2:10; 3:4; Maimonides, Poisons, p. 126.

expectorant, to soothe and cure stomach ailments and skin conditions, to stop haemorrhages, to accelerate menstruation, as a diuretic, and to treat dog bite.<sup>987</sup>

**TM:** In various countries medical properties are ascribed to the leaves of the plant in relation to heart and lungs. A potion of the leaves is used to treat hair and prevent baldness. In southern Europe the leaves serve as a component in a traditional medicine against cough, asthma, and colds. The leaves are also considered a mild purgative that causes vomiting when a large dosage is taken. The plant also contributes to the acceleration of menstruation.<sup>988</sup> In Iraq, Iran, and elsewhere in Asia other species of fern are called by an identical name (Venus hair). The root stem serves there as an expectorant for treating diseases of the respiratory system and cough.<sup>989</sup> The leaves of the plant serve to prepare a substitute for tea, while the fresh leaves are eaten raw.<sup>990</sup> In Iran and Iraq a cold drink is prepared from the plant that is served in summer.<sup>991</sup>

## Malabathrum

*Cinnamomum citriodorum* (Lauraceae),<sup>992</sup> **A:** *sādhaj*

**D&H:** Kind of cinnamon from which scented oil is made.

**PU:** Malabathrum is present in a prescription for unknown uses (T-S Ar.43.338).

**TU:** Malabathrum appears in medical books (T-S Ar.11.23; T-S Ar.39.106; T-S Ar.40.5; T-S Ar.43.98; T-S Ar.44.148; T-S Ar.44.149), on ophthalmology (T-S Ar.42.144; T-S Ar.43.101; T-S Ar.43.263; T-S Ar.43.166; T-S Ar.44.170; T-S AS 177.506), in prescriptions for theriac, purgative, general tonic, stomach ailments, colic (T-S Ar.42.199; T-S Ar.43.320; T-S Ar.45.28), in a recipe booklet (T-S Ar.39.167), in a lexicon of *materia medica* (T-S Ar.44.204), in pharmacopoeias (T-S Ar.41.114; T-S Or.1081 1.6), and in other fragments (T-S Ar.39.472; T-S NS 297.262).<sup>993</sup>

<sup>987</sup> Ibn al-Baytar, al-Jami, I, p. 86; Leclerc, nos. 256, 1155, 1159, 1324, 1934, 2017. Cf. ompare al-Antaki, pp. 70, 272.

<sup>988</sup> Dafni, Edible, p. 120; Dafni, Mandrakes, p. 88; Loewenfeld & Back, p. 169; Uphof, p. 13; Grieve, pp. 304–305.

<sup>989</sup> Hooper, p. 81; al-Rawi & Chaakravarty, p. 8; Chizik, p. 727; Ben-Yakov, p. 520.

<sup>990</sup> Dafni, Edible, p. 120.

<sup>991</sup> Hooper, p. 81.

<sup>992</sup> Issa, p. 49, no. 4.

<sup>993</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

**OMU:** Ibn Sīnā writes that the malabathrum improves the smell of the breath, prevents caries, treats 'hot' swellings, is good for the liver and stomach, and cures 'hot' eye swellings.<sup>994</sup> R. Nathan ben Yoel Falaquera recommends the use of the plant for the treatment of eye diseases; it also was used as diuretic and to prevent bad breath.<sup>995</sup>

## Manna

Camel thorn, *Alhagi maurorum* (Fabaceae), **A:** **taranjubīn**<sup>996</sup>

**D&H:** Rabbinical literature sometimes refers to the plant as a thorn (Bab. Talmud, Baba Kama, 91b), and sometimes as a tree (Tosefta, Erubin, 3:15).<sup>997</sup>

**PU:** Manna features in 3 lists of *materia medica* (T-S Ar.30.291; T-S Ar.43.315; T-S Ar.43.315).

**TU:** Manna is also mentioned in books (T-S Ar.41.66; T-S Ar.44.91; T-S Ar.44.148; T-S Ar.44.149; T-S Ar.45.45; T-S NS 90.80), on ophthalmology (T-S Ar.42.144; T-S Ar.44.13), on dermatology (T-S NS 90.66v), on fevers (T-S Ar.44.57), *materia medica* (T-S Ar.41.61), and in pharmacopoeias (T-S Ar.40.91; T-S Ar.40.130; T-S Ar.44.37; T-S Ar.45.33; T-S NS 222.43).<sup>998</sup>

**OMU:** Ibn al-Bayṭār cites Abū al-ʿAbbās al-Nabātī asserting that its extract makes the whites of the eyes shine and freshened them; he also cites al-Rāzī stating that the extract of the leaves is a medication against chronic headache.<sup>999</sup> According to al-Bīrūnī, manna is a purgative and cleansing drug, and also serves to soften the throat and to remove phlegm.<sup>1000</sup> al-Qazwīnī notes that an ointment produced from it is effective against cough, headaches, and stomach-aches, softens the chest, and relieves thirst.<sup>1001</sup>

**TM:** The Arabs of Israel use all parts of the plant for medical purposes: the root to dissolve kidney stones, to relieve rheumatic pains, to stop diarrhoea, and to treat diabetes; the leaves to open obstructions in the

<sup>994</sup> Ibn Sina, I, p. 380.

<sup>995</sup> Amar & Buchman, p. 217.

<sup>996</sup> Issa, p. 8, no. 17; Dinsmore & Dalman, no. 605; Maimonides, Glossaire, nos. 166, 386; Amar, Ibn al-Baytar, p. 61, n. 36.

<sup>997</sup> Bodenheimer, Manna; Danin, Manna; El-Gammal, Manna.

<sup>998</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>999</sup> Ibn al-Baytar, al-Jami, II, p. 3; Leclerc, no. 553.

<sup>1000</sup> al-Biruni, I, pp. 90–91; II, 82. Cf. Ibn Sina, p. 443.

<sup>1001</sup> al-Qazwīnī, p. 244.



urinary tract; the seeds to treat diseases of the spleen, constipation, and haemorrhoids.<sup>1002</sup> The sugary berries secreted by the plant have the properties of a gentle purgative and an expectorant drug, and they were therefore collected in the Middle East and in Asia in large quantities. The oil produced from the leaves served as a medication for rheumatism. There is a substance in the leaves and branches that increases sweat.<sup>1003</sup> The Jews of Iraq used camel thorn leaves to treat haemorrhoids and syphilis.<sup>1004</sup>

**TAI:** Manna is mentioned in a trader's document (T-S Ar.30.219).

### Meadow saffron

Autumn crocus, *Colchicum sp. (autumnale, ritcii)* (Colchicaceae), **A:** *sūranjān, khamīra*<sup>1005</sup>

**D&H:** Perennial growing from bulb-like corm (10 cm), with pointed lance-shaped leaves and tubular six-petalled pink flowers in autumn.<sup>1006</sup> In ancient Babylonia the plant served in treating swellings, poisoning, scorpion bites, and pains of the chest, head, eyes, and limbs. Meadow saffron was even used in ancient Egypt.<sup>1007</sup> The researcher Low identified the meadow saffron with the 'havazelet' mentioned in the Bible (Isaiah 35:1; Song of Songs 2:1) but others disagree.<sup>1008</sup> Dioscorides mentions two species of meadow saffron: *Kolchikon* and *Ephemeron*, warns of their toxicity, and describes the use of the bulb to relieve toothache, to cure bruises and wounds, and to treat cancerous growths.<sup>1009</sup>

**PU:** Meadow saffron features in 4 prescriptions: for small 'iṭrīful (T-S Ar.42.67), a purgative (T-S Ar.39.458), and for unknown uses (T-S AS 155.365; T-S Ar.41.81).

**TU:** Meadow saffron is also mentioned in medical books (T-S Ar.40.194; T-S Ar.41.66; T-S Ar.44.102; T-S AS 177.304; T-S Or.1080.1.72), on dentistry (T-S Ar.42.44), on dermatology (T-S Ar.43.114), on *materia medica* (T-S Ar.40.60), in pharmacopoeias (T-S Ar.45.14), in recipes for

<sup>1002</sup> Palevitch et al., p. 57, including additional uses in eastern countries.

<sup>1003</sup> Plants & Animals, X, p. 170; Hooper, p. 81; al-Rawi & Chaakravarty, p. 9.

<sup>1004</sup> Ben-Yakov, pp. 205, 249.

<sup>1005</sup> Issa, p. 54, nos. 3,7; Dinsmore & Dalman, no. 1744.

<sup>1006</sup> Chevallier, p. 191.

<sup>1007</sup> A historical review of the use of meadow saffron is in Eigsti & Dustin, pp. 1–14.

<sup>1008</sup> Feliks, World, p. 242.

<sup>1009</sup> Dioscorides, IV.84–85.

unknown uses (T-S Ar.39.487; T-S AS 162), and in other fragments (T-S Or.1080.13.12).<sup>1010</sup>

**OMU:** al-Kindī used the plant to prepare a medication to treat kidney stones and mental illnesses.<sup>1011</sup> Maimonides recommends the plant to treat haemorrhoids and abscesses, and warns of its being lethal poison.<sup>1012</sup>

Ibn al-Bayṭār, noted that Egyptian women used the plant together with orchid in a preparation for safe fattening without harmful side effects. He also cites al-Rāzī stating that the plant contributes to sexual appetite, makes the face rosy, and gives it beauty.<sup>1013</sup>

**TM:** In Egypt various species of meadow saffron served to induce vomiting, and were intended for treating diarrhoea, to prepare pills for fattening and for strengthening, and to cure a person suffering from parasites.<sup>1014</sup> The bulbs of the meadow saffron contain a dangerous poison, colchicines, an alkaloid known for its anti-mitotic properties. The substance acts on cell division and causes the creation of cells with a double number of chromosomes.<sup>1015</sup>

**TAI:** Ibn al-Bayṭār notes that it was found in Egypt ‘and from there was taken to al-Shām as a whole.’<sup>1016</sup>

## Melon

*Cucumis melo* (Cucurbitaceae), **A:** **shammām**

**D&H:** Vegetable with round, hairy small leaves and tendrils. It originated in tropical Asia and Africa. The fleshy fruit is sweet and has yellow seeds in the middle.

**PU:** Melon features in a prescription for dietetics (food value of fruits; T-S Ar.39.244).

**TU:** Melon also appears in pharmacopoeias (T-S Ar.39.208; T-S NS 222.22).<sup>1017</sup>

<sup>1010</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>1011</sup> al-Kindī, nos. 181, 216.

<sup>1012</sup> Maimonides, Aphorisms, 22:67; Maimonides, Poisons, p. 148.

<sup>1013</sup> Ibn al-Baytar, al-Jami, III, pp. 129–130; Leclerc, no. 1575.

<sup>1014</sup> Ducros, p. 120, no. 209; Dafni, Mandrakes, p. 60; Uphof, p. 144.

<sup>1015</sup> Uphof, p. 143; Hooper, p. 103; Chopra et al., p. 59; Eigsti & Dustin, pp. 175–201; al-Rawi & Chaakravarty, p. 29; Plants & Animals, XI, p. 200.

<sup>1016</sup> Ibn al-Baytar, al-Jami, III, pp. 129–130; Leclerc, no. 1575.

<sup>1017</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

**OMU:** Maimonides recommends the consumption of melons for good health. It was used as diuretic and for the improvement of stomach functioning.<sup>1018</sup> al-Birūnī writes that the melon is a diuretic, induces vomiting, cures swellings of different body organs, and cleans and brightens facial skin.<sup>1019</sup>

**TM:** In traditional medicine in Israel melon seeds are used to treat stomach ailments and stones in the urinary tract.<sup>1020</sup>

**TAI:** Melons are mentioned as one of the common vegetables in Egypt.<sup>1021</sup>

## Mercury

Hg, A: zī'baq<sup>1022</sup>

**D&H:** Metallic element, known in its liquid formation. Common in nature as sulphide mercury. Pure mercury was used in Babylonia for fumigation in the ears and for the eyes. Dioscorides regards mercury as poisonous if drunk.<sup>1023</sup>

**PU:** Mercury features in 6 lists of *materia medica* (T-S Ar.35.328; T-S Ar.35.344; T-S Ar.39.450; T-S Ar.39.487; T-S Ar.43.317; T-S AS 214.96).

**TU:** Mercury is also mentioned in medical books: in a lexicon of *materia medica* (T-S AS 184.234), and in recipes for the preparation of a compound (T-S NS 90.64) and of an ointment that also contains pigeon fat as the base, Jew's stone, sal ammoniac, and other simples (T-S Ar.40.136). It is also found in a quasi-medical amulet against amnesia and fear (T-S Ar.44.45) and in alchemical processes of several metals and minerals (T-S Ar.44.59; T-S AS 165.79; T-S AS 182.283).<sup>1024</sup>

**OMU:** al-Kindī used mercury in clysters as an effective remedy for dripping urine and for calculi.<sup>1025</sup> R. Nathan ben Yoel Falaquera recommends mercury to kill lice and fleas and for the treatment of skin diseases (with rose oil).<sup>1026</sup>

<sup>1018</sup> Maimonides, Regimen, p. 40.

<sup>1019</sup> al-Biruni, I, pp. 410–411.

<sup>1020</sup> Lev & Amar, Ethnic, p. 152.

<sup>1021</sup> Goitein, Society, I, p. 121.

<sup>1022</sup> Maimonides, Glossaire, no. 139.

<sup>1023</sup> Dioscorides, V.110.

<sup>1024</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1025</sup> al-Kindi, pp. 277–278, no. 132.

<sup>1026</sup> Amar & Buchman, p. 159.

**TAI:** Mercury is mentioned in many Genizah merchants' letters and other trading documents [mainly from the 11th century] regarding its commerce in the Mediterranean. It was exported from the West (mainly Sicily, its main source, and where it was also sold) to the East and sold in the cities and ports of Cairo, Ramlah, Alexandria, Mahdiyya, and Qayrawān. Several fragments deal with techniques of handling jars containing the hazardous material and some accidents.<sup>1027</sup>

## Mint

*Mentha sativa* (Lamiaceae), **A:** **nammām, na'nā**<sup>1028c</sup>

**D&H:** Strongly aromatic annual plants, with square-stems (80 cm), with serrated leaves.<sup>1029</sup> Mint was known in the Levant as a food and medicinal plant from Hellenistic times. The Chinese used it for curative purposes about 3000 years ago. The plant is not mentioned in the Bible, although a number of species grow wild in the Land of Israel. Classical physicians such as Pliny recommend the use of this plant to prepare medications for stomach problems. Dioscorides describes the *Eduosmos* and the *Kalaminthe*, identified with mint species and used to treat stings and bites, to increase the quantity of mother's milk, to cure internal diseases, mainly intestinal, and to eliminate intestinal worms.<sup>1030</sup>

**PU:** Mint is found in a prescription (T-S Ar.43.338).

**TU:** Mint is also mentioned in medical books (T-S Ar.40.1; T-S Ar.40.91; T-S Ar.43.138; T-S AS 176.409; T-S NS 90.24), in recipes for diarrhoea (T-S Ar.41.104), for cold and cough (T-S Ar.11.11), for fevers (T-S Ar.44.57), for wind, warts, dysuria, dysmenorrhea, hard swelling, and an abortifacient when the foetus is dead (T-S Ar.42.151), for jaundice with acute fever and palpitation (T-S NS 305.116); in books on *materia medica* (T-S Ar.39.451; T-S Ar.41.130; T-S Ar.44.204; T-S AS 167.17; T-S AS 177.39), on toxicology (T-S Ar.41.116), in pharmacopoeias (T-S Ar.41.123; T-S Ar.42.151; T-S Ar.44.76; T-S Or.1080.3.11), and in a recipe for unknown uses (T-S AS 162.185). Wild mint is found in

<sup>1027</sup> Gil, Kingdom, I, p. 560, II, p. 399, no. 140, p. 541, no. 184, p. 545, no. 185, III, p. 241, no. 372, p. 488, no. 447; Ben-Sason, p. 224, no. 54, p. 296, no. 68; Goitein, Society, II, p. 154, 202, 338, and more.

<sup>1028</sup> According to Issa, pp. 117–118; Maimonides, Glossaire, no. 256; al-Antaki, p. 331; Leclerc, nos. 585, 1712; Dinsmore & Dalman, no. 1340.

<sup>1029</sup> Chevallier, p. 112

<sup>1030</sup> Dioscorides, III.41, 43.

recipes for the treatment of: convulsion and tetany, fevers and colic (T-S Ar. 40.162), in a prescription (unknown uses; T-S AS 167.36), and in lexica of *materia medica* (T-S AS 177.39r; T-S AS 184.293), one of which cites Ibn Māsawayh (T-S AS 179.329). Mint-water is mentioned in a recipe for unknown uses (T-S AS 176.401). Peppermint is present in a lexicon of *materia medica* (citing Ibn Māsawayh; T-S AS 179.329), and other species are found in a recipe for unknown uses (T-S Ar.34.217).<sup>1031</sup>

**OMU:** al-Kindī describes the use of the plant to cure diseases of the spleen, liver, stomach, and sinews.<sup>1032</sup> Other writers too, such as Ibn Waḥshiyya and Ibn Sīnā, assert that the various species of mint serve as a component in medications against bites and stings of venomous creatures.<sup>1033</sup> Maimonides notes the use of mint to treat bites and stings, and also to prepare the ‘theriac’ which is mentioned citing al-Rāzī. Elsewhere Maimonides reports on the use of the plant to stimulate urination, to treat stomach ulcers, to cleanse menstrual blood, and to strengthen the lungs. It is a hot and dry drug.<sup>1034</sup> Ibn al-Bayṭār lists many medical uses.<sup>1035</sup> al-Qazwīnī, in the entry ‘Na‘nā’<sup>1036</sup>, cites Ibn Sīnā describing its effectiveness in strengthening the stomach, soothing hiccups, and preventing pregnancy, and also its contribution to sexual ability. The plant also served to treat headaches, dog bites, and haemorrhages.<sup>1036</sup>

**TM:** Various species of the plant served to improve scent, to brew a tea, to make a sauce for salads, to give taste to sweets, liquors, baked goods, and for the cosmetics industry.<sup>1037</sup> Traditional medicine uses it as an aromatic component that eases digestion, disinfects, and cures diarrhoea, spasms in the digestive system, colds, headaches, and toothache.<sup>1038</sup> The Arabs of Israel and the Bedouins used varieties of mint to improve digestion, to stop bad breath, to lower fever, to reduce gases, to cure acne, and to treat pains of the stomach and throat, eye diseases, and women’s diseases.<sup>1039</sup> The Jews of Tunisia used the plant to cure eye infections, and the Jews of Morocco took it for colds, toothache, asthma, haemorrhoids,

<sup>1031</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>1032</sup> al-Kindi, pp. 312–313, no. 223.

<sup>1033</sup> Levey, *Toxicology*, pp. 53, 55; Ibn Sina, p. 274.

<sup>1034</sup> Maimonides, *Poisons*, pp. 100, 103, 118; Maimonides, *Aphorisms*, 9:70, 88; 16:2; 21: 80; 22: 40.

<sup>1035</sup> Ibn al-Baytar, *al-Jami*, IV, pp. 181–182; Leclerc, no. 2227.

<sup>1036</sup> al-Qazwīnī, p. 263. Compare al-Biruni, I, p. 322.

<sup>1037</sup> Loewenfeld & Back, p. 181; Dafni, *Edible*, p. 89; Uphof, p. 342.

<sup>1038</sup> Grieve, pp. 533–546; *Plants & Animals*, XII,95; Chizik, p. 729.

<sup>1039</sup> Abu-Rabia, p. 18; Dafni, *Edible*, p. 89.

and vomiting, and to arouse sexual desire.<sup>1040</sup> In Iran the plant serves to treat colds, joint pains, and dysentery.<sup>1041</sup> In Iraq horse mint serves as a carminative drug, a stimulant, and a disinfectant.<sup>1042</sup>

## Minium

**A:** 'asāraj, 'usrunj<sup>1043</sup>

**D&H:** Red oxide of lead. According to classical and medieval sources minium is black lead burned in a strong fire until it turns red, whereupon salt is spread over it.<sup>1044</sup> It is a mixture of lead oxide and peroxide.

**PU:** Minium is found in a prescription (T-S Ar.41.72 [iyāraj]).

**TU:** Minium is also mentioned in general medical books (T-S Ar. 41.118; T-S Ar.44.204).<sup>1045</sup>

**OMU:** al-Kindī used red lead for abscesses, boils, and lacerations.<sup>1046</sup> Ibn al-Bayṭār recommends the use of minium for wounds and external as well as internal abscess.<sup>1047</sup>

## Mulberry

*Muros nigra*, [Black Mulberry] *M. alba* [White Mulberry] (Moraceae),

**A:** tūt<sup>1048</sup>

**D&H:** Deciduous tree (15 m), with toothed leaves, flowers in catkins and white or black berries.<sup>1049</sup> Dioscorides describes the use of the *Morea* (black mulberry) to treat toothache and various infections, to eliminate intestinal worms, to dye the hair, and to treat putrescent wounds in the throat and throat infection.<sup>1050</sup> Mulberry is also mentioned in the Mishna (Ma'aserot, 1:2), the reference seemingly being to the black mulberry. In the Talmud its use is noted as a purgative (Jer. Talmud, Shabbat,

<sup>1040</sup> Krispil, p. 762.

<sup>1041</sup> Hooper, p. 140.

<sup>1042</sup> al-Rawi & Chaakravarty, p. 65.

<sup>1043</sup> Maimonides, Glossaire, no. 28; Amar & Seri, p. 57.

<sup>1044</sup> Dioscorides, V.96; al-Ghāfiqī, pp. 223–224, no. 110.

<sup>1045</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1046</sup> al-Kindi, p. 228, no. 6.

<sup>1047</sup> Ibn al-Baytar, al-Jami, I, p. 32.

<sup>1048</sup> Additional names in Maimonides, Glossaire, no. 108; Issa, p. 121, no. 2; Dinsmore & Dalman, nos. 1573, 1574.

<sup>1049</sup> Chevallier, p. 235.

<sup>1050</sup> Dioscorides, I.180.

14c). The Greeks spurred their war elephants against the Maccabees by using ‘the blood of the grape and the mulberry’ (Maccabees I, 6:34).

**PU:** Mulberry features in a list of *materia medica* that were sold after the death of a pharmacist (T-S AS 152.131).

**TU:** Mulberry is also mentioned in medical books (T-S Ar.40.1; T-S Ar.44.51; T-S Ar.44.91; T-S Ar.44.148; T-S Ar.44.149), on *materia medica* (T-S Ar.39.468; T-S Ar.41.138), in pharmacopeias (T-S Ar.39.468), on dentistry (T-S Ar.42.39), and on podiatry (T-S Ar.45.20).<sup>1051</sup>

**OMU:** al-Birūnī especially emphasizes the black species, which was prolific around Damascus and in Syria, as well as its medical uses, mainly to treat the stomach.<sup>1052</sup> Ibn al-Bayṭār describes the uses of the plant by classical, Roman, and Arab physicians. Among these uses are curing intestinal diseases, diarrhoea, burns and wounds, and relieving toothache and backache.<sup>1053</sup> The scholar al-Ghazzī describes many varieties of mulberry, some characteristic of Damascus. According to him, the fruit was used to treat dysentery.<sup>1054</sup> According to al-Kindī, black mulberry served to treat pus in the neck and to extract mucus from the back part of the head.<sup>1055</sup> According to Maimonides, the plant was a food that spoils quickly in the stomach and therefore he recommended that it be eaten before the food. It was also used to treat intestinal worms, and the juice of the mulberry leaves in wine was a medicine for the bite of a venomous spider and against the ‘poison of menstrual blood’. The bark of the mulberry tree causes vomiting and was therefore given to a person who had eaten poisonous plants such as henbane.<sup>1056</sup>

**TM:** The fruit of both species is edible and their leaves serve as food for silkworms (mainly the leaves of the white mulberry). The fruit of the black mulberry is used to make syrup for curative purposes, and also in the cosmetics industry.<sup>1057</sup> The outer layer of the black mulberry root is used in Iraq and Iran as a medicine against menstrual pains.<sup>1058</sup> The Jews of Iraq also used the white mulberry leaves to treat toothaches.<sup>1059</sup>

<sup>1051</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>1052</sup> al-Biruni, I, pp. 96–97; II, p. 83.

<sup>1053</sup> Ibn al-Baytar, al-Jami, I, pp. 142–143; Leclerc, nos. 434, 1679.

<sup>1054</sup> Hamarneh, Plants, p. 244.

<sup>1055</sup> al-Kindi, no. 70.

<sup>1056</sup> Maimonides, Aphorisms, 20:53, 61; 21:73; 22:46; Maimonides, Poisons, pp. 123, 147.

<sup>1057</sup> Uphof, p. 351; Hill, p. 404; Hooper, p. 141; al-Kindi, p. 241.

<sup>1058</sup> Hooper, p. 141.

<sup>1059</sup> Ben-Yakov, p. 376.

## Mumie

*Rissasphalt*, A: *mūmiyā*<sup>1060</sup>

**D&H:** Mumie is one of the most ancient drugs in Iran and northern India.<sup>1061</sup> In the eastern Mediterranean recent research proved that asphalt from the Dead Sea was used in the mummification process commonly practised in Egypt during the Hellenistic period (2nd cent. BCE).<sup>1062</sup> Mumie has been a common medical substance for ages and there are several theories about its identification and source:

- a. Mumie comes from the mummified bodies found in Egypt. In the mummification process, different herbs, oils, resins and medicinal minerals were used in order to preserve the body. This substance was found in the desert sands of Egypt and in sealed graves and was exported all over the East and even to some Western countries.
- b. Mumie is a black mineral substance composed of carbon and hydrogen (similar to asphalt) which is formed from organic materials in a natural chemical process. This substance was collected in the mountain areas of Iran and Iraq.
- c. The substance comprises the concentrated urine of mountain goats which subsequently underwent chemical processes over a long period of time.<sup>1063</sup>

**PU:** Mumie figures in a list of *materia medica* (T-S Ar.39.487).

**TU:** Not yet found.

**OMU:** Muslim physicians such as Ibn Sīnā, Al-Rāzī, and al-Bīrūnī state that mumie is a black substance similar to asphalt which slides down into the sea from high mountains. According to their writings, mumie was a component in various remedies for the treatment of headache, earache and sore throat, coughs, paralysis, and heart and stomach disorders. Mumie was used externally to set broken bones, to cure lesions of the sexual organs, and for internal uses such as renal disorders.<sup>1064</sup> Ibn al-Bayṭār reports that ‘mūmyā al-qubūrī’ originated in Egypt, and asserts: ‘this name was also given to the black stone’ found in Ṣan‘ā (Yemen) which was easily broken and contained black fluid used for

<sup>1060</sup> Maimonides, Glossaire, no. 234.

<sup>1061</sup> Hooper, pp. 198–199.

<sup>1062</sup> Nissenbaum, Mummies, pp. 5–6.

<sup>1063</sup> Hooper, pp. 198–199; Ben-Yakov, pp. 534–535.

<sup>1064</sup> Ibn Sīnā, pp. 367–368; al-Biruni, I, pp. 310–311.



the treatment of broken bones.<sup>1065</sup> al-Qazwīnī tells of the similarity he finds between mumie and asphalt, and maintains that mumie, which was brought from Iran and Iraq, had the best medicinal qualities. The medicinal uses he mentions are similar to those by other physicians.<sup>1066</sup> Mumie was also used for medicinal purposes in medieval Europe.<sup>1067</sup>

**TM:** Babylonian Jews used mumie to treat wounds, bruises, dislocations, and back pains. It was also used to calm panic and cure internal wounds.<sup>1068</sup>

Both mineral mumie and other kinds of mumie can be found in the markets of countries such as Israel, Jordan, Syria, and Egypt. Some of its applications are similar to medieval ones, including bone-setting. Other uses such as the reduction of sugar and cholesterol levels are modern.

**TAI:** Frederick Hasselquist relates that he saw mumie (a mineral he said was from Iran)<sup>1069</sup> among the many medical substances in the Franciscan pharmacy in Jerusalem. He also describes mumie brought from Iran to Egypt, and he was impressed by its high cost and its application as an important component in several remedies for the treatment of wounds and broken bones.<sup>1070</sup>

## Mustard

*Sinapis alba* (Brassicaceae), **A: khardal**<sup>1071</sup>

**D&H:** Tall (1 m) hairy annual, with central stem, feathery leaves, and yellow flowers. The pods are narrow, long, and bear black aromatic seeds.<sup>1072</sup> In Babylonia the mustard plant was used for strangury and venereal disease, as a stomachic, to stay the menses, for jaundice, lung problems, and swelling, for the eyes and ears and for ‘anus trouble’.<sup>1073</sup> In Assyrian medicine mustard was used to treat swelling, cough, jaundice and stomach ailments, and toothache. It also was administered as an enema or used as a mouthwash.<sup>1074</sup> Hippocrates advises the use of the

<sup>1065</sup> Ibn al-Baytar, al-Jami, IV, pp. 169–170.

<sup>1066</sup> al-Qazwīnī, p. 214.

<sup>1067</sup> Gordon, Medieval, p. 665.

<sup>1068</sup> Ben-Yakov, pp. 94, 234, 236, 266, 268, 349, 355, 414, 533.

<sup>1069</sup> Hasselquist, pp. 199–200; Horn, p. 6.

<sup>1070</sup> Ibid., pp. 303–304.

<sup>1071</sup> Issa, p. 169, no. 16.

<sup>1072</sup> Lev & Amar, Ethnic, p. 114.

<sup>1073</sup> al-Kindi, p. 264.

<sup>1074</sup> Manniche, p. 148.

seeds internally and externally (counter-irritating poultice & vinegar) and in disorders of the digestive organs.<sup>1075</sup> Dioscorides notes that *sinepi* (identified as white mustard) were used for tonsillitis, sciatica, spleen, leprosy, hardness of hearing, dullness of sight, and alopecia.<sup>1076</sup> The Copts in Egypt used mustard externally to treat headache, and internally for flatulence.<sup>1077</sup>

**PU:** Mustard figures in a prescription for unknown uses (T-S NS 194.70).

**TU:** Mustard is also mentioned in medical books: in recipes for the treatment of eye complaints such as weakness and dimness of vision and drooping eyelids (T-S Ar.41.40), for colic (T-S Ar.43.142), and at the beginning of a medical work that opens with the *basmalah* and refers to the sayings of the Jewish Sages. The text starts with a recipe for cleansing facial skin and resolving puffiness under the eyelids, tetter, and ulcerated scabs; besides mustard, olive oil, garlic, nard, and lard are mentioned (T-S AS 180.231r).<sup>1078</sup>

**OMU:** al-Kindī used the seeds in a drug for leprosy, in an application for erysipelas, in a salve for itching, and in rose water for neck pustules.<sup>1079</sup> Medieval physicians such as al-Bīrūnī (12th century), al-Rāzī (10th century), and Ibn Māsawayh recognized different species: white (*Sinapis alba*), red (*Sinapis nigra*), and some others growing in India and Pakistan. They learned the diverse qualities of each of the kinds of seed and their uses. The seeds were used for the expression of edible oil and as a curative in dyspepsia and flatulence.<sup>1080</sup> Ibn al-Bayṭār describes the two species and the medical uses of both. The plant (mainly leaf and seeds) was used to treat wide variety of inflammations including rheumatism, to relieve pain (mainly toothache and earache), to help fight colds and influenza, to cure the jaundice, and to dissolve stones in the urinary system. The plant cures cough, swollen lungs, and pain in the chest. When eaten it helps to cure fever and strong headaches.<sup>1081</sup>

**TM:** In Iraq the seeds are used as condiment and a pickling spice.<sup>1082</sup> In Iraq and Iran the seeds are used as a rubefacient and as an emetic

<sup>1075</sup> Grieve, p. 566.

<sup>1076</sup> Dioscorides, II.184.

<sup>1077</sup> Manniche, p. 148.

<sup>1078</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1079</sup> al-Kindi, nos. 23, 47, 60, 70, 145.

<sup>1080</sup> al-Biruni, I, pp. 141–142, II, p. 91.

<sup>1081</sup> Ibn al-Baytar, al-Jami, II, pp. 137–138, see also al-Antaki, pp. 453–454.

<sup>1082</sup> al-Rawi & Chakravarty, p. 88.

especially in cases of narcotic poisoning.<sup>1083</sup> Jews in Iraq used the seeds as condiment and for popular medicine.<sup>1084</sup> In North Africa seeds are used against chronic constipation as a laxative. Pulverized seeds are used as a purgative.<sup>1085</sup>

## Nutmeg

*Myristica fragrans* (Myristicaceae), **A:** jawzbuwā, basbāsa, jawz al-ṭīb<sup>1086</sup>

**D&H:** The nutmeg is an evergreen tree with small flowers, growing in tropical Asia, mainly on the islands of the eastern Indian Ocean. The fruit is fleshy and peach-shaped, with a single, large seed or kernel. The seed or nut is encased in a red, net-like aril or mace which is also used as a spice and for medicinal purposes.<sup>1087</sup> The use of the fragrant nutmeg as a remedy was known to physicians of the classical period. Dioscorides<sup>1088</sup> states that nutmeg is a constricting drug used for treating blood in the sputum, dysentery, and diarrhoea. In the Mishna the expression 'rashei besamim' (chief of the spices) appears, and scholars interpret it to mean 'jawz buwā.'<sup>1089</sup> Maimonides also includes the 'basbāsa' (mace) among the main spices.<sup>1090</sup> The Arabs began to trade in it in the 6th century CE, and by the 12th century it was well known in Europe.<sup>1091</sup>

**PU:** Nutmeg figures in 2 lists of *materia medica* (T-S AS 184.234; T-S AS 184.34) and in 2 prescriptions for unknown uses (T-S AS 151.225; T-S AS 182.242).

**TU:** Nutmeg is also mentioned in medical books: in recipes for unknown uses (T-S AS 170.136) and for the treatment of colic and coughs (pills; T-S NS 90.61); likewise in M.M. lexica (T-S Ar.41.37; T-S AS 167.137; T-S AS 182.183) and for the treatment of coughs and colds and in recipes attributed to Galen (T-S Ar.11.11).<sup>1092</sup>

<sup>1083</sup> Hooper, p. 92.

<sup>1084</sup> Ben-Yakov, p. 517.

<sup>1085</sup> Boulos, p. 73.

<sup>1086</sup> Maimonides, Glossaire, p. 32, no. 71; Leclerc, nos. 464, 846, 1443; Issa, p. 122, no. 6.

<sup>1087</sup> Zohary, p. 306.

<sup>1088</sup> Dioscorides, I.110.

<sup>1089</sup> Epstein, p. 145.

<sup>1090</sup> Maimonides, Mishna, p. 452.

<sup>1091</sup> Watson, Innovation, p. 195.

<sup>1092</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

**OMU:** According to al-Kindī, nutmeg is a component in a medication to strengthen breathing.<sup>1093</sup> According to Benevenutus, nutmeg was one of the components in a famous medication called the 'Jerusalem Electuary' used mainly to treat cataract.<sup>1094</sup> Maimonides quotes the Jerusalem physician al-Tamīmī describing the 'royal beverage' containing nutmeg, which served as a medication for the elderly, for colds, and for rheumatic pains. It was also prescribed to strengthen the stomach, improve the appetite, and enhance sexual desire.<sup>1095</sup> According to Maimonides nutmeg was a hot and dry drug.<sup>1096</sup> Ibn al-Bayṭār relates that the nutmeg aril (mace) was used as a remedy and was named 'darakīsa' in the al-Shām region.<sup>1097</sup>

**TAI:** Different parts of the nutmeg, mainly peels and seeds, were widely traded by the Genizah merchants, so these commodities are found in letters and documents sent from Mahdiyya, Qayrawan, and Palermo to Alexandria and Cairo. Egypt appears to have been an important entrepot for nutmeg exported from Asia.<sup>1098</sup> Nutmeg was a delicate and expensive merchandise in the major markets of the Land of Israel, as is evident from the tax lists of Acre in the first half of the 13th century.<sup>1099</sup> It was carried overland from India via Mecca to the ports of the Levant, and from there to Europe.<sup>1100</sup> Nutmeg is shipped in large quantities to Europe from Egypt too during this same period.<sup>1101</sup> Additional evidence for its high value and overland transport is found in a letter of 1411 written by an Italian trader, who describes the caravans from Mecca to Damascus, and thence to Ramlah, which brought the nutmeg seeds and flowers. Half of the merchandise remained in Ramlah and the rest was carried by Italian ships to Europe.<sup>1102</sup>

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<sup>1093</sup> al-Kindi, p. 213.

<sup>1094</sup> Benevenutus, p. 33.

<sup>1095</sup> Maimonides, Aphorisms, 21:96.

<sup>1096</sup> Ibid., 21:75; Maimonides, Regimen, p. 109.

<sup>1097</sup> Ibn al-Baytar, Tafsir, p. 132. Discussion in Amar, Ibn al-Baytar, p. 52, no. 52.

<sup>1098</sup> Goitein, Society, I, pp. 253, 337; Gil, Kingdom, III, p. 403, no. 574, p. 913, no. 575, IV, p. 101, no. 672.

<sup>1099</sup> Assises, p. 174, par. 8; Ashtor, Levant, p. 53.

<sup>1100</sup> Ashtor, Trade, p. 297.

<sup>1101</sup> Ashtor, Levant, p. 33.

<sup>1102</sup> Ashtor, Trade, p. 297.

## Opopanax

*Opopanax chironium* (Apiaceae), **A:** *jāwshīr*<sup>1103</sup>

**D&H:** An oriental tree, which today grows in southern Europe and Turkey. The resin was used in ancient Babylonia for clysters, and externally for the treatment of chest, eyes, breast, loins, and blains.<sup>1104</sup> Dioscorides used opopanax for agues, rigours, convulsions, coughs, strangury, and scabies in vesica, dysmenorrhoea, ulcers, and carbuncles. It also kills the embryo and improves the sight.<sup>1105</sup>

**PU:** Opopanax figures in a prescription for the treatment of wind and colic (T-S NS 305.50).

**TU:** Opopanax is also mentioned in books: in recipes for the treatment of: entropion and roughness of the eyelids (T-S Ar.39.167), convulsion and tetany, fevers, and colic (T-S Ar.40.162), and to strengthen penile erection (T-S AS 181.82).<sup>1106</sup>

**OMU:** al-Kindī used it for rheumatism, phlegm, and black bile.<sup>1107</sup> al-Ghāfiqī cites Galen saying that the roots are less desiccative and warming than the resin. It is a detersive and good for abscesses.<sup>1108</sup> R. Nathan ben Yoel Falaquera recorded the plant as one of the substances used for the treatment of eye diseases.<sup>1109</sup>

**TM:** In modern Egypt opopanax is used as an antispasmodic, expectorant, laxative and for the treatment of arthritis and other diseases.<sup>1110</sup>

## Oriental plane tree

*Platanus orientalis* (Platanaceae), **A:** *junnār*<sup>1111</sup>

**D&H:** Tall (up to 15 m) deciduous tree with big hairy leaves (15–20 cm). It grows on river banks in the Mediterranean and Irano-Turanian zones.

<sup>1103</sup> Issa, p. 129, no. 1, Maimonides, Glossaire, no. 76.

<sup>1104</sup> al-Kindi, pp. 254–255, no. 67.

<sup>1105</sup> Dioscorides, III, no. 55.

<sup>1106</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1107</sup> al-Kindi, pp. 254–255, no. 67.

<sup>1108</sup> al-Ghāfiqī, pp. 419–421, no. 206.

<sup>1109</sup> Amar & Buchman, p. 42.

<sup>1110</sup> Ducros, no. 62, p. 35.

<sup>1111</sup> Issa, p. 143, no. 11, Maimonides, Glossaire, no. 93 mentions a similar Arabic name, *ṣanār*.

The tree can survive for hundreds of years.<sup>1112</sup> Dioscorides employed the leaves for the treatment of eye diseases and the bark for toothache.<sup>1113</sup>

**PU:** Oriental plane tree features in a list of *materia medica* (T-S AS 183.159).

**TU:** Not found yet.

**OMU:** Various Muslim physicians used the plant's products medicinally; they are also mentioned by the classical sources. The wood, burnt as fumigation, was said to kill worms and cockroaches and to deter bats.<sup>1114</sup>

Ibn Sinā mentions the use of oriental plane tree for the treatment of toothache, wounds, burns, eye swellings, nosebleed, animal stings and bites, and leprosy.<sup>1115</sup> R. Nathan ben Yoel Falaquera recommends the plant for leprosy and toothache (peel boiled in vinegar).<sup>1116</sup>

## Orpine

Stone crop; *Sedum sp.* or *Sempervivum sp.*<sup>1117</sup> (Crassulaceae), **A:** ḥayy al-<sup>ʿ</sup>ālam<sup>1118</sup>

**D&H:** Wild rocky plants, grown ornamentally too. Many species are fleshy; they originated in Europe and Asia.

**PU:** Orpine features in a list of *materia medica* (T-S NS 321.49) and is mentioned in a recipe for ointment (T-S Ar.43.238).

**TU:** Orpine is also mentioned in medical books (T-S Ar.11.6), on eye diseases (T-S Ar.43.201), on fevers (T-S NS 90.52), on *materia medica* (T-S Ar.39.478; T-S Ar.44.204; T-S Or.1080.2.74) and in a pharmacopeia (T-S Ar.40.112).<sup>1119</sup>

**OMU:** al-Kindī writes that the *mishā* (*Sempervivum sp.*) was used to treat nosebleed and in a drug to get rid of mice.<sup>1120</sup> R. Nathan ben Yoel Falaquera recommends orpine to calm the nerves, clean the lungs, prevent blood-spitting, stop bleeding, and ease kidney pains.<sup>1121</sup>

<sup>1112</sup> Plants & Animals, X, p. 124.

<sup>1113</sup> Dioscorides, I.107.

<sup>1114</sup> al-Ghāfiqī, pp. 483–486, no. 232.

<sup>1115</sup> Ibn Sina, I, p. 292.

<sup>1116</sup> Amar & Buchman, p. 175.

<sup>1117</sup> al-Kindi, p. 338, no. 298.

<sup>1118</sup> Issa, p. 166, nos. 3–12; Maimonides, Glossaire, no. 162.

<sup>1119</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1120</sup> al-Kindi, p. 338, no. 298.

<sup>1121</sup> Amar & Buchman, p. 187.

## Oxymel

### A: sikanjabīn<sup>1122</sup>

**D&H:** Syrup made of honey and vinegar. Dioscorides used oxymel made of vinegar, sea salt, honey, and water for arthritis and epilepsy.<sup>1123</sup>

**PU:** Oxymel figures in 3 prescriptions: in an ointment (T-S Ar.43.238), in a family prescription (T-S NS 223.82–83), and in a syrup for the treatment of fever (T-S AS 155.277).

**TU:** Oxymel is also mentioned in medical books in recipes for unknown uses, for the preparation of potions with lemon (T-S Ar.39.462), in ointments (T-S AS 144.104; T-S AS 144.105), and as a laxative (T-S Ar.40.130); a recipe for the preparation of oxymel was found as well (T-S Ar.43.71). It appears in lexica of *materia medica*, one of which cites the names of Dioscorides, Galen, Ibn Māsawayh, and al-Khūzī (T-S Ar.41.44). It also appears in recipes for the treatment of: colds and coughs (attributed to Ibn Māsawayh; T-S Ar.11.11), hardness of the spleen, diseases of the liver and abdomen and looseness of the bowels [with berberis; T-S NS 306.4], quartan fever, the burning of black bile and phlegm (T-S NS 306.74), haematuria, bites of scorpions and reptiles (T-S AS 176.277), and cold sweat (T-S AS 177.456).<sup>1124</sup>

**OMU:** al-Kindī used oxymel in an ointment for baldness, and in a tooth powder that polishes the teeth, removes decay, and protects the teeth.<sup>1125</sup>

R. Nathan ben Yoel Falaquera recommends oxymel to neutralize the negative effects of cannabis.<sup>1126</sup>

**TAI:** Goitein writes that according to the Genizah fragments oxymel was a very common and widely utilized medicinal liquid.<sup>1127</sup>

<sup>1122</sup> al-Kindi, p. 284, no. 149.

<sup>1123</sup> Dioscorides, V.22.

<sup>1124</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1125</sup> al-Kindi, p. 284, no. 149.

<sup>1126</sup> Amar & Buchman, p. 240.

<sup>1127</sup> Goitein, Society, IV, p. 248.

## Papyrus

Nile papyrus, Reed Papyrus. *Cyperus papyrus* (Cyperaceae), **A: qartās, qirtās, bardī, burdī**<sup>1128</sup>

**D&H:** Erect grass-like plant (2 m), with cylindrical brown tubers, lance-shaped leaves, and rays of small spikes of green-brown flowers.<sup>1129</sup> The names of the species in Hebrew and Latin derive from the Greek form of an ancient Egyptian word that means ‘gift of the river’. In early times this plant served as raw material to produce paper, boats, ropes, mats, baskets, and sandals. Dioscorides described the *Papuros* which is identified with reed papyrus which served to lance abscessed lesions, and its ash was used as a medication to treat mouth sores and swellings.<sup>1130</sup> The Jewish Sages note the use of certain reed species, especially reed papyrus, as food and for the production of paper, mats, baskets, and ropes.<sup>1131</sup>

**PU:** Papyrus features in 3 lists of *materia medica* (T-S Ar.35.327; T-S NS 224.62; T-S AS 176.22).

**TU:** Papyrus is also mentioned in medical books (T-S Ar.40.104), on paediatrics (T-S Ar.44.20), on ophthalmology (T-S Ar.44.13), on *materia medica* and in pharmacopeias (T-S Ar.41.133; T-S Ar.44.153; T-S Ar.44.205).<sup>1132</sup>

**OMU:** Ibn al-Bayṭār describes the plant and states its uses mainly in Egypt, where it was widely found.<sup>1133</sup> Dāwud al-Anṭākī states that the ash of the plant cleans the teeth, cure wounds, stops haemorrhages, and heals infection in the spleen, while the stem when chewed dispels bad odours, cures teeth cavities, causes lack of appetite, and reduces swellings. In his view this is a cold and dry plant.<sup>1134</sup>

<sup>1128</sup> Issa, p. 66, no. 11; Dinsmore & Dalman, no. 1795; Maimonides, Glossaire, no. 46.

<sup>1129</sup> Chevallier, p. 197.

<sup>1130</sup> Dioscorides, I.115

<sup>1131</sup> Feliks, World, p. 294.

<sup>1132</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1133</sup> Ibn al-Baytar, al-Jami, I, pp. 86–87; Leclerc, no. 257. See also entries 681, 1198, 1661, 1778.

<sup>1134</sup> al-Antaki, p. 70. Cf. Ibn Sina, p. 278; al-Ghāfiqī, no. 151.



## Parsnip

Secacul, *Malabaila secacul* = *Pastinaca schekakul* (Apiaceae), **A:** **jam-jam, shaqāqīl**<sup>1135</sup>

**D&H:** Parsnip is a biennial plant with a white root and is one of the carrot varieties that grew in the Land of Israel in medieval times.<sup>1136</sup>

**PU:** Parsnip figures twice in a list of *materia medica* (T-S NS 306.115) and in a prescription (T-S AS 173.3).

**TU:** Parsnip is mentioned in medical books (T-S Ar.40.68) such as Ibn Sīnā (T-S Ar.41.96), some on with sexual medicine (T-S Ar.41.75; T-S AS 179.226; T-S AS 179.251), and in pharmacopoeias (T-S Ar.41.96; T-S Ar.41, 114; T-S Ar.45.33).<sup>1137</sup>

**OMU:** According to Maimonides, 'shaqāqul' is a moist drug and a component of 'the great 'iṭrīful'. Elsewhere it is mentioned as an ingredient in a 'beneficial powder for coitus'.<sup>1138</sup> According to R. Nathan ben Yoel Falaquera (13th century) it was used as an aphrodisiac.<sup>1139</sup>

## Pear

*Pyrus communis* (Rosaceae), **A:** **kummathrā**<sup>1140</sup>

**D&H:** Tall deciduous tree (10 m) of Iranian origin, with long leaves, white flowers, and fleshy shiny green-yellow edible fruit.<sup>1141</sup> Pear was cultivated in Greece in the first millennium BCE, and was spread throughout the Mediterranean basin by the Romans. Dioscorides notes that essence of pear (*Apion*) causes constipation.<sup>1142</sup>

**PU:** Pear figures in 4 prescriptions: for unknown uses (T-S Ar.44.162; T-S NS 327.97; T-S NS 265.62) and water of pears leaves is found in a prescription for potion (T-S AS 151.56).

<sup>1135</sup> Issa, p. 113, no. 18.

<sup>1136</sup> Issa, p. 135, no. 17; discussion of identity in Amar, Production, p. 71. On the cultivated species *Pastinaca sativa* see Uphof, p. 391. Medicinal uses are given in Grieve, pp. 615–617.

<sup>1137</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1138</sup> Maimonides, Regimen, 3:11; Maimonides, Aphorisms, 21:72; Maimonides, Sexual, Introduction, section 2.

<sup>1139</sup> Amar & Buchman, p. 248.

<sup>1140</sup> Maimonides, Glossaire, no. 187; Issa, p. 151; Dismore & Dalman, no. 674; a discussion on identity is in Amar, Production, p. 32.

<sup>1141</sup> Plants & Animals, XII, p. 108.

<sup>1142</sup> Dioscorides, I.167.

**TU:** Pear is mentioned in medical books (T-S Ar.35.76; T-S Ar.43.138; T-S AS 179.247) and in others on fevers (T-S Ar.44.208) and on *materia medica* (T-S Ar.44.60), and in pharmacopoeias (T-S Ar.41.47; T-S AS.177.343; T-S AS 178.260).<sup>1143</sup>

**OMU:** al-Kindī describes the medical use of the pear in the context of giving a medical infusion.<sup>1144</sup> Maimonides states that the pear, like other types of fruit, is 'bad for eating and softens the stomach and its excrement'. This means that the pear was defined as a light purgative medicine and was listed with the cold and wet drugs.<sup>1145</sup> Ibn al-Bayṭār describes the medical history of the pear, from the views expressed by classical physicians to those of his contemporaries. They all warned against eating too much of the fruit, reported its purgative properties, and noted that it occasionally caused constipation.<sup>1146</sup>

**TM:** The Jews of Iraq made extensive use of the pear for medical purposes in cases of dumbness, skin diseases, diseases of the breathing tract, sexual diseases (gonorrhoea and syphilis), eye diseases, typhus, and jaundice.<sup>1147</sup>

**TAI:** In the Mamluk period pears were listed among the fruits of trees grown in the Levant, exported to Egypt, and even planted there.<sup>1148</sup> The fruit was not commonly found in the centre of the country<sup>1149</sup> but was grown in the north, in Transjordan, and on Mount Sinai.<sup>1150</sup> Because the agricultural infrastructure was destroyed during the Ottoman period, pears disappeared from the markets in the country, and were exported from Damascus to Ramlah, Jaffa, and Jerusalem.<sup>1151</sup>

<sup>1143</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1144</sup> al-Kindi, nos. 211, 214. Cf. al-Biruni, II, 70.

<sup>1145</sup> Maimonides, Aphorisms, 21:74; Maimonides, Regimen, 1:13, 2:7; 3:2.

<sup>1146</sup> Ibn al-Baytar, al-Jami, III, pp. 77–78; Leclerc, no. 1963; Cf. al-Antaki, p. 260; Ibn Sina, pp. 348–349.

<sup>1147</sup> Collected references in Ben-Yakov, p. 694. Content of substances in Plants & Animals, XII, p. 109.

<sup>1148</sup> al-'Umari (A. F. Sayyid ed.), p. 25. In detail in Amar, Production, p. 34.

<sup>1149</sup> Borchard, p. 87.

<sup>1150</sup> For example, al-Dimashqi, p. 211; Volney, p. 326.

<sup>1151</sup> Amar, Production, p. 34; Suriano, pp. 39, 223; Yaari, Letters, p. 172.

### Pellitory of Spain

Pyrethra, *Anacyclus* {*Anthemis*} *pyrethrum* (Asteraceae), **A:** ‘āqir qarhā, ‘ūd qarh<sup>1152</sup>

**D&H:** Perennial herb (30 cm), with smooth alternate leaves and large white flowers with yellow centres.<sup>1153</sup> Classical physicians such as Dioscorides describe the use of the *Pyrethron* to treat paralysis, toothache, and excess phlegm.<sup>1154</sup>

**PU:** Pellitory of Spain and its wood feature in 4 lists of *materia medica* (T-S Ar.39.451; T-S AS 184.234; T-S Ar.39.136; T-S AS 214.96).

**TU:** Pellitory of Spain is also mentioned in medical books (T-S Ar.11.18; T-S Ar.11.30; T-S Ar.11.31; T-S Ar.40.1; T-S Ar.40.61; T-S Ar.40.162; T-S Ar.44.91; T-S Ar.44.148; T-S Ar.44.149; T-S NS 90.71), on ophthalmology (T-S Ar.44.147; T-S NS 306.168), on dentistry (T-S Ar.42.39), on sex (T-S Ar.41.75; [recipe for paresis and weakness of sexual organ, and as aphrodisiacs] T-S AS 179.226), on fever (T-S NS 222.31), on dermatology (T-S NS 90.66), on *materia medica* (T-S Ar.44.204), and in pharmacopoeias (T-S Ar.41.114; T-S Ar.44.205; T-S Ar.45.19; T-S NS 222.74; T-S AS 179.29; T-S AS 179.110; T-S Or.1081.1.6). It is also found in recipes for palpitation, theriac, a purgative, against caries, for toothache (mouthwash; T-S Ar.42.199; T-S Or.1080.7.17), and some for unknown uses (T-S AS 159.241; T-S Ar.39.450; T-S NS 224.146).<sup>1155</sup>

**OMU:** The physician Assaf describes the plant which is a hot drug and effective in curing various diseases, mainly pains of the eyes and of the knees.<sup>1156</sup> al-Kindī describes the use of the plant to cleanse spots, to treat sore throat, insanity, pustules in the neck, and for brushing the teeth.<sup>1157</sup> al-Birūnī also describes the plant and notes its uses to relieve sore throat, headaches, and stomach-ache.<sup>1158</sup> Maimonides states that the plant served as a component in the theriac which was mentioned by al-Rāzī, and was also a hot and dry drug.<sup>1159</sup> Ibn al-Bayṭār cites classical and Arab physicians indicating the chief uses of the roots to relieve

<sup>1152</sup> Maimonides, Glossaire, no. 299; Issa, p. 14, no. 11; Chizik, p. 732. Discussion of identification of the plant and its references in Amar, Ibn al-Bayṭār, p. 72, n. 67.

<sup>1153</sup> Chevallier, p. 164.

<sup>1154</sup> Dioscorides, III.86.

<sup>1155</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1156</sup> Assaph, IV, 402.

<sup>1157</sup> al-Kindī, nos. 47, 70, 73, 77, 91, 99, 100, 102, 104, 106, 205.

<sup>1158</sup> al-Biruni, I, 223. Cf. Ibn Sina, pp. 296–297.

<sup>1159</sup> Maimonides, Poisons, p. 114; Maimonides, Aphorisms, 21:85.

toothache and to treat malaria, the shivers (chills), paralysis, swellings, and scorpion stings.<sup>1160</sup>

**TM:** The plant serves as a source for ethereal oils that are used as taste additives in liquors and in mouthwashes to rinse the teeth. The roots contain the alkaloid pyrethrin which has a pungent taste.<sup>1161</sup> The ethereal oils produced from the plant serve as a medicine against toothache. The roots are sometimes used for chewing. The dried roots, gathered in the autumn, are used as stimulants, causing blushing and as substances that have a stimulating effect.<sup>1162</sup> In North Africa, a drug is produced from the roots of the pellitory of Spain that causes copious salivation. In Iraq and Iran it is used to cure toothaches.<sup>1163</sup> In Egypt the plant is used to treat paralysis and epilepsy.<sup>1164</sup>

**TAI:** Several merchants' letters and documents record the trade in pellitory of Spain in Alexandria, Cairo, and Tunisia particularly in the 11th century.<sup>1165</sup>

### Sweet basil

*Ocimum basilicum* var. *pilosum* (Lamiaceae), **A:** **faranjmushk** (P)<sup>1166</sup>

**D&H:** Tall plant (up to 60 cm), square red stems, big leaves. The seeds are blackish-brownish.

**PU:** Sweet basil features in a prescription for unknown uses (T-S Ar.43.338).

**TU:** Sweet basil also appears in medical books on palpitation (T-S Ar.44.148; T-S Ar.44.149), on ophthalmology (T-S AS 179.59), in a pharmacopoeia, and in lexica of *materia medica* (T-S Ar.39.369; T-S Ar.40.91; 40.104; T-S Ar.42.73; T-S Ar.44.204; T-S Or.1080.3.39).<sup>1167</sup>

**OMU:** Ibn Sīnā writes that sweet basil was used to open obstructions in the brain and the nose, to accelerate the pulse, and was useful for the treatment of haemorrhoids.<sup>1168</sup> R. Nathan ben Yoel Falaquera

<sup>1160</sup> Ibn al-Baytar, al-Jami, III, p. 115; Leclerc, no. 1507. Cf. al-Antaki, p. 235.

<sup>1161</sup> Uphof, p. 34.

<sup>1162</sup> Uphof, p. 34; Grieve, pp. 621–622.

<sup>1163</sup> Hooper, p. 85.

<sup>1164</sup> Ducros, p. 95, no. 166.

<sup>1165</sup> Gil, Kingdom, III, p. 510, no. 452, p. 885, no. 570, IV, p. 358, no. 715.

<sup>1166</sup> Maimonides, Glossaire, no. 47; Issa, p. 127, no. 1.

<sup>1167</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1168</sup> Ibn Sina, I, p. 406.

recommends the plant to treat heart ailments, haemorrhoids, and nasal obstructions.<sup>1169</sup>

**TM:** In traditional medicine in Israel, mainly among the Iranian Jews, it is used for the treatment of heart diseases.<sup>1170</sup>

## Pine

Stone Pine; nuts, *Pinus pinea* (Pinaceae), **A:** **ṣanawbar**<sup>1171</sup>

**D&H:** Wild Mediterranean tree (10 m) that also grows in forests and gardens; cones are oval and bear white edible wingless seeds.<sup>1172</sup> Medical writings of ancient Egypt and Mesopotamia (Assyria and Babylonia) mention pine resin, which was a component in many medications for diseases of the eyes, ears, breathing tract, kidneys, muscles, and sexual organs.<sup>1173</sup> According to this identification the pine tree was used to prepare poles to be used as torches for lighting bonfires. Dioscorides describes the use of pine cones to treat the kidneys and the urinary bladder, while pine seeds were used to treat cough and lung diseases. Other parts of the tree served to treat toothache and pains in the eyelids, wounds, and liver problems. In his entry *Pitousa*, Dioscorides reports that the root of the pine tree, apparently the Aleppo pine, was a purgative.<sup>1174</sup>

**PU:** Pine resin and seeds feature in a prescription of linctus for cough (T-S AS 148.22).

**TU:** Pine is also mentioned in books: in recipes for stomach ailments and colic (seeds; T-S Ar.45.28) in lists of *materia medica* (resin; T-S Ar.11.25), in other medical books (seeds: T-S Ar.41.66; resin: T-S Ar.43.114), on *materia medica* (T-S Ar.42.115), in pharmacopoeias (seeds: T-S Ar.40.66; T-S Ar.41.114; T-S NS 34.16; T-S NS 222.21; T-S NS 222.69; resin: T-S NS 90.27; T-S AS 182.298), in quasi-medical writings (seeds: T-S Ar.39.181), and in other fragments (seeds: T-S NS 297.88; T-S Ar.44.174; T-S Or.1080.13.12; resin: T-S Ar.43.145).<sup>1175</sup>

<sup>1169</sup> Amar & Buchman, p. 228.

<sup>1170</sup> Lev & Amar, *Ethnic*, p. 220.

<sup>1171</sup> Dinsmore & Dalman, 1611; Issa, p. 140, no. 17; Maimonides, *Glossaire*, no. 317.

<sup>1172</sup> Zohary, p. 218.

<sup>1173</sup> al-Kindi, p. 299.

<sup>1174</sup> Dioscorides, I.86, 88.

<sup>1175</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

**OMU:** Ibn Waḥshiyya (10th cent.) states that pine seed is effective for the urinary bladder, for curing the kidneys, and for drying moisture.<sup>1176</sup> al-Kindī states that the seeds of the pine tree were a component in a preparation against cough caused by cold and phlegm.<sup>1177</sup> al-Bīrūnī describes the use of pine resin for medical purposes.<sup>1178</sup> ‘Ṣanawbar’, according to Maimonides, was a hot drug,<sup>1179</sup> and he also notes a medication called ‘madād’ made from the ash of the ‘ṣanawbar’,<sup>1180</sup> and says that pine needles were a component in a medication to strengthen the penis and to constrict the glans.<sup>1181</sup> Dāwud al-Anṭākī describes the medical uses of ‘ṣanawbar’, for example, to cure paralysis, spasms and trembling, jaundice, skin diseases of the kidneys and the urinary tract, and haemorrhoids. ‘Ṣanawbar’ also arouses desire, cures diseases of the lung, and improves eyesight.<sup>1182</sup>

**TM:** Pine needles contain Vitamin C and are suitable for treating rheumatism, muscle pain and exhaustion. A drink made of pine needles is suitable for those suffering from asthma and bronchitis, from nerve diseases, and from kidney stones, as well as for those suffering from diarrhoea and haemorrhoids.<sup>1183</sup> Yemenite Jews used it to cure wounds and to prepare a medication against tuberculosis and lung wounds. Liquid tar is produced, called in this region ‘qīṭrān’. Among the Yemenite Jews it was a disinfectant and expectorant, and was used to treat diseases of the skin and of the breathing tract. This substance contains hydrocarbons, organic acids, and resin oils.<sup>1184</sup>

**TAI:** The Arab geographer, al-Muqaddasī states that the excellent fruit of the pine comes from the region of Jerusalem.<sup>1185</sup> In an 11th-century commercial document found in the Genizah, Abun ben Ṣedaka of Jerusalem tells of a merchant from Tyre who arrived in Jerusalem on his way to Zoar. In Jerusalem he traded, among other things, in ‘khashab’.

<sup>1176</sup> Ibn Waḥshiyya, II, 1222.

<sup>1177</sup> al-Kindī, nos. 110, 115. Cf. Ibn Sina, p. 415.

<sup>1178</sup> al-Biruni, II, p. 94. See also entry ‘Cedar Tar’, Chapter 7.

<sup>1179</sup> Maimonides, Aphorisms, 21:71. Cf. al-Antaki, p. 224.

<sup>1180</sup> Maimonides, Glossaire, no. 248. Muntner identifies ‘Madad’ with black ink (*Atramentum*).

<sup>1181</sup> Maimonides, Sexual, p. 34.

<sup>1182</sup> al-Antaki, p. 244. Cf. Leclerc, no. 1417, and see also: al-Biruni, I, pp. 207–208.

<sup>1183</sup> Krispil, p. 29.

<sup>1184</sup> Reiani, nos. 89, 134. On the use of pine resin in the world, see Howes, pp. 104–114, and entry ‘Cedar Tar’ in Chapter 7.

<sup>1185</sup> al-Muqaddasi, p. 181; Frenkel, p. 232.

Goitein explains that this probably refers to a various kinds of medications that begin with the word 'khashab' (wood), and the best known among them was the bark of the pine tree, called 'khashab şanawbar' that served as a remedy.<sup>1186</sup> The seeds of the pine tree served as food and were even exported from Jerusalem to Egypt.<sup>1187</sup> Pine wood was used for building in Egypt.<sup>1188</sup>

## Pistachio

*Pistacia vera* (Anacardiaceae), **A: fustaq, fustuq**<sup>1189</sup>

**D&H:** Big deciduous tree (10 m) of Irano-Turanian origin, with leathery leaves, big oval leaflets, which produces large edible fruit that is used in medicine as well.<sup>1190</sup> The pistachio tree is often mentioned in the Bible and in rabbinical literature.<sup>1191</sup> It may be that the 'nuts' mentioned as part of the 'choice fruits of the land' (Genesis 43:11) were the fruit of the *Pistacia vera* or the *Pistacia atlantica*.<sup>1192</sup> In the period of the Mishna and Talmud the pistacia tree was also called by its Aramaic name, 'bot-min' (Jer. Talmud, Kilayim, 27a), while the fruit was called 'fistiqin', as it is today in Arabic and Greek.<sup>1193</sup> Dioscorides describes *Terminthos*, identified with *Pistachia terebinthus*,<sup>1194</sup> and notes that it grew in Petra, Judea, Syria, and Cyprus. According to him its resin was tapped and served for strengthening the stomach and treating the eyes and ears, and as a purgative.<sup>1195</sup> Many medieval sources describe the varieties of pistacia that grow in Israel and their many uses: to produce oil, to mark boundaries, and as holy trees planted over the graves of saints.<sup>1196</sup> In the past and in the present various kinds of pistachio trees were and are

<sup>1186</sup> Goitein, Jewry, p. 204.

<sup>1187</sup> Plants & Animals, XII, p. 146.

<sup>1188</sup> Goitein, Society, II, p. 436.

<sup>1189</sup> Maimonides, Glossaire, no. 301; Issa, pp. 141–142; Dinsmore & Dalman, nos. 402–404.

<sup>1190</sup> Plants & Animals, XII, p. 141.

<sup>1191</sup> Feliks, World, pp. 104–106; Low, I, pp. 190–200.

<sup>1192</sup> Zohary, p. 484.

<sup>1193</sup> A discussion of identity is in Amar, Production, p. 41.

<sup>1194</sup> According to the researcher Issa, this species was the Palestinian pistachia or a closely related type. See Issa, p. 141, no. 14.

<sup>1195</sup> Dioscorides, I.91. On this species see Uphof, p. 413.

<sup>1196</sup> Amar, Production, pp. 42–44; Rabbi Moshe Bassola in Ya'ari, Travels, p. 141.

extensively used: their fruit are used as food and oil, and other products are extracted.<sup>1197</sup>

**PU:** Pistachio peel appears in a prescription (T-S Ar.30.305) and in 2 lists of *materia medica* (T-S NS 306.106; T-S AS 177.139).

**TU:** Pistachio is also mentioned in medical books (T-S Ar.41.66), on dermatology (T-S Ar.43.114), on sex (T-S Ar.44.121), on diet (weight increase—forty days' regimen of bulbs and nuts, including pistachio; T-S Ar.40.194), and in recipes for general tonic, emmenagogues, abortifacient, and bath (T-S Ar.43.320; T-S Ar.45.30; T-S NS 224.181), and in other fragments (T-S Ar.38.51).<sup>1198</sup>

**OMU:** Levi ben Yefet the Karaite (11th cent.) in his book of commandments permits 'the eating of fistak and such like' (*Pistacia vera*) on the Sabbath since it was a medication against diarrhoea.<sup>1199</sup> Ibn al-Bayṭār notes that was a hot and wet drug that was beneficial for the stomach.<sup>1200</sup> He discusses the resins obtained from various species of the pistachio and cites Dioscorides noting that the source of the resin is a tree that grows in Petra, Falasṭīn, and in the al-Shām region. Ibn al-Bayṭār details many medical uses for the resin.<sup>1201</sup> Maimonides states that 'fustaq' is a component in a medication to strengthen sexual desire. Another component in the same medication is the seed of *Pistacia atlantica*. Crushed 'fustaq' was a component in a syrup to regulate bowel activity, and the oil of the 'fustuq' was a component in a compound to strengthen the heart, the senses, and virility, and against aging. 'Fustaq' is a purgative listed among the hot and dry drugs. The resin of the tree was a component in a 'medicine to strengthen the penis and to constrict the glans.'<sup>1202</sup>

**TM:** The seed, which is used as food, contains 60% fat and is a condiment as well as being used to make halva.<sup>1203</sup> In Iraq and Iran the resin of Asian species of the pistachio was used to season food and fruits—for eating and for relieving stomach pains. The resin of *Pistacia terebinthus* was a chewing gum and served to cure cancerous growths.<sup>1204</sup> Medical

<sup>1197</sup> Amar, Landscape, pp. 118–121.

<sup>1198</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1199</sup> Levi ben Yefet, p. 47.

<sup>1200</sup> Ibn al-Baytar, al-Jami, III, p. 162; Leclerc, no. 1681.

<sup>1201</sup> Ibn al-Baytar, al-Jami, III, pp. 131–132; Leclerc, no. 1581. Cf. entry 'Butum' in al-Antaki, p. 249, and also Ibn Sina, p. 396.

<sup>1202</sup> Maimonides, Regimen, 1:13; 2: 9, 11; Maimonides, Aphorisms, 13:44, 50; 21: 69; Maimonides, Sexual, 8:6.

<sup>1203</sup> Plants & Animals, XII, p. 141; Uphof, p. 413.

<sup>1204</sup> Hooper, pp. 152–153.



use of the resin of *Pistacia vera* is common to the present day in Aleppo and in surrounding areas.<sup>1205</sup>

**TAI:** Pistachio were imported into Egypt and traded in Cairo and Alexandria, according to Genizah documents.<sup>1206</sup>

## Pyrite

Marcasite, FeS<sub>2</sub>, **A:** *marqashīthā*<sup>1207</sup>

**D&H:** Iron pyrite is a mineral with a metallic gloss and a yellow colour. It is ubiquitous across the world and appears in various types of magmatic, metamorphic, and sedimentary rocks. In Israel it appears mainly in magmatic rocks and in shales. This mineral is an important raw material for the production of sulphur, copper, and other metals such as gold, nickel, or cobalt. In ancient times the pyrite was struck with steel to light a fire.<sup>1208</sup> One of the types of pyrite is bronite (Cu<sub>3</sub>FeS<sub>3</sub>) which contains up to 63.3% copper and is actually a sulphate mineral of copper and iron.<sup>1209</sup> In the past pyrite was used mainly for the production of copper and other metals, for example, by the Phoenicians in the mines in Spain.<sup>1210</sup> The medical use of the substance in classical times is described by Dioscorides in his entry *Purites Lithos*.<sup>1211</sup>

**PU:** Pyrite appears in a list of *materia medica* (T-S NS 321.49).

**TU:** Pyrite is also mentioned in medical books on ophthalmology (recipe for the treatment of various eye complaints, such as weakness and dimness of the vision and drooping eyelids; T-S Ar.41.40), in a pharmacopoeia (T-S AS 144.205), in other fragments (T-S Ar.39.472), in letter about medicine (T-S Ar.43.245), and in quasi-medical alchemical recipes (T-S Ar.39.302).<sup>1212</sup>

**OMU:** al-Kindī describes the use of ‘*marqashīthā*’ in an eye ointment that was intended to strengthen and protect eyesight.<sup>1213</sup> al-Qazwīnī cites

<sup>1205</sup> Sanagustin, p. 88, no. 171.

<sup>1206</sup> Goitein, Society, I, p. 121, IV, p. 441; Gil, Kingdom, III, p. 750, no. 524, p. 966, no. 591, IV, p. 582, no. 792.

<sup>1207</sup> On the identification see al-Kindī, pp. 335–26, no. 287; Ghaleb, II, p. 472, no. 21041.

<sup>1208</sup> *HE*, XXVII, 778.

<sup>1209</sup> *Ibid.*, XXV, 52.

<sup>1210</sup> *Ibid.*, XXVII, 778.

<sup>1211</sup> Dioscorides, V.143.

<sup>1212</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>1213</sup> al-Kindī, pp. 158, 163.

Aristotle explaining that different types of pyrite exist, some associated with gold, others with silver, and yet others with copper, but they are all mixed with sulphur. When the sulphur is burned a powder remains that has many uses, among them the treatment of various eye and skin diseases, to remove freckles, to treat leprosy, and to soften and refine the hair.<sup>1214</sup>

**TAI:** al-Tamīmī places the origin of ‘marqashīthā’ on the shores of the Eastern Mediterranean.<sup>1215</sup>

### Red-behen

Sea-lavender, *Statice limonium* (Plumbaginaceae), **A:** **bāhmān aḥmar**<sup>1216</sup>

**D&H:** The roots, of the size of carrot, are usually twisted, and curved and have an aromatic smell and flavour.

**PU:** Red-behen as well as white-behen both appear in one prescription (T-S Ar.43.338).

**TU:** Not yet found.

**OMU:** Maimonides describes the medical qualities of the plant as hot and dry.<sup>1217</sup> R. Nathan ben Yoel Falaquera recommends the use of the plant to treat heart ailments, increase weight, and improve sperm quality.<sup>1218</sup> al-Ghāfiqī cites earlier physicians regarding the medical uses of the two kinds of behen, mainly for fortifying the heart, fattening, helping against gout, and as an aphrodisiac.<sup>1219</sup>

### Resin

Mainly of *Pinus sp.* (Pinaceae), **A:** **qalufūniyā, rātīnaj**<sup>1220</sup>

**D&H:** Resin of pine, cedar, and cypress.<sup>1221</sup> Dioscorides describes the use of various species of tamarisks (*Kedros*), the resin derived from them,

<sup>1214</sup> al-Qazwīnī, p. 209. Cf. Ibn al-Baytar, al-Jami, IV, pp. 152–153; Leclerc, no. 2116.

<sup>1215</sup> al-Tamīmī, p. 102.

<sup>1216</sup> Issa, p. 174, no. 10. another identification for the same Arabic name is *Salvia haemetoides*: see Issa, p. 161, no. 23.

<sup>1217</sup> Maimonides, Aphorisms, 21:77.

<sup>1218</sup> Amar & Buchman, p. 163.

<sup>1219</sup> al-Ghāfiqī, p. 297, no. 139.

<sup>1220</sup> Maimonides, Glossaire, no. 352.

<sup>1221</sup> Other products from these trees are tar and oil; see entries tar and cedar.

and their medical uses.<sup>1222</sup> The resin of the cedar and pine was used for various purposes, including curing humans and animals (mainly for skin diseases), long before the flowering of Islamic medicine.<sup>1223</sup>

**PU:** Resin of pine features in 2 lists of *materia medica* (T-S Ar.30.274; T-S AS 184.234) and in a prescription (T-S NS 265.62) for unknown uses.

**TU:** Resin is mentioned in medical books (T-S Ar.43.98; T-S AS 178.24) and a pharmacopoeia (T-S NS 306.29), and in a recipe for a dressing applied to wounds and ulcers (T-S Ar.45.56).<sup>1224</sup>

**TM:** Yemenite Jews used the resin to cure wounds, to reduce fever of the wounds, and as a component in a medication against tuberculosis and lesions in the lungs. The resin of the pine species *Pinus succinifera* was also used to treat haemorrhages in the lungs and haemorrhoids, to strengthen the heart, to stop diarrhoea, to soothe the nerves, and to treat melancholy and insanity.<sup>1225</sup> Among the Jews of Iraq the resin served as a component in ointments to treat skin diseases such as scurvy, as a component in a medication to stop the menstrual cycle, and as one of the components in a dressing to treat swellings.<sup>1226</sup> In Egypt ‘iṭrān’ was taken internally in the 20th century to treat chest problems, and externally as a component in various ointments.<sup>1227</sup> Ethereal oils derived from cedar resin were components in cleaning materials, soaps, cosmetic products, and preparations to repel insects.<sup>1228</sup>

## Sagapenum

*Ferula persica* (Apiaceae), **A:** **sakabīnāj**<sup>1229</sup>

**D&H:** Various species of ferula that grow worldwide and are used for curative purposes. Medical use was made mainly of the resin produced from the base of the stem.<sup>1230</sup> During the Roman period the different

<sup>1222</sup> Dioscorides, I.105.

<sup>1223</sup> Ullman, *Medicine*, p. 217.

<sup>1224</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1225</sup> Reiani, nos. 89–90.

<sup>1226</sup> Ben-Yakov, pp. 108, 30, 233.

<sup>1227</sup> Ducros, p. 108, no. 190.

<sup>1228</sup> Hill, p. 190.

<sup>1229</sup> Issa, 82–14; Maimonides, *Glossaire*, no. 280.

<sup>1230</sup> Identification of species according to Maimonides, *Glossaire*, nos. 18, 31, 124, 223, 280, 339; Issa, p. 82, nos. 8–18. Uses and synonyms also in Uphof, p. 222; Hooper, p. 120; Chopra et al., pp. 37–38.

varieties of ferula, mainly the resin extracted from the base of the stems, were an important medicinal substance. Dioscorides describes six plants and also various substances that originated from different species of ferula (including the giant fennel), and notes especially those that grew in Syria: *Sagapenum*, a resin of the giant fennel. Pliny also describes a species of ferula that grew on mountains in Syria.<sup>1231</sup>

**PU:** Sagapenum features in a list of *materia medica* (T-S Ar.34.341) and 3 prescriptions (T-S Ar.41.81; T-S NS 265.62), one of them a purgative (T-S Ar.39.458).

**TU:** Sagapenum is also mentioned in books: in recipes for the treatment of entropion and roughness of the eyelids (T-S Ar.39.167), to induce vomiting (T-S Ar.41.4r), against sciatica, varicose veins, and venesection (T-S NS 306.172), for eye complaints (preparation of collyria; T-S AS 147.74), for eye complaints with collyria and venesection (T-S AS 179.59). It also appears as a simple in recipes for unknown uses (T-S AS 181.232), one of which describes two potions attributed to Galen and Archigenes (T-S NS 306.54), and the other is a compound (T-S AS 176.403).<sup>1232</sup>

**OMU:** al-Kindi states that the resin was a component in medications for the treatment of kidneys and glands, back pains, and insanity, and also to purify meat.<sup>1233</sup> Maimonides notes that it was a hot and dry drug, serving as treatment for 'nerve bruises', that is, painful or crushing wounds.<sup>1234</sup>

**TM:** Sagapenum described by Dioscorides is a resin of *Ferula persica* that grows in Iran, and its uses resemble those of the asafeotida and the olibanum. Today both are marketed to the ports of India and Western Asia. In modern Egypt the substance is considered a purgative and sexually arousing, while in Iran and Iraq it is used to treat joint diseases, back pains, and haemorrhoids.<sup>1235</sup>

**TAI:** Sagapenum was among a few medicinal materials which were bought in Cairo for export.<sup>1236</sup>

<sup>1231</sup> Pliny XII.25.

<sup>1232</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1233</sup> al-Kindi, nos. 1, 32, 63, 138, 188, 205.

<sup>1234</sup> Maimonides, Sexual, 7:1; Maimonides, Aphorisms, 9:88; 15:33.

<sup>1235</sup> al-Kindi, p. 283; Ducros, p. 72, no. 126; Hooper, p. 119.

<sup>1236</sup> Gil, Kingdom, II, p. 676, no. 231; Dietrich, Egypt.

## Safflower

*Carthamus tinctorius* (Asteraceae), **A: qurṭum, qirṭim**<sup>1237</sup>

**D&H:** Annual herb (90 cm), with six oblong-oval leaflets, and groups of yellow flowers arising from the leaf axils.<sup>1238</sup> It was cultivated from early times for its flowers which were used as dyeing agents (red, yellow). It was also used as a cosmetic and as an addition to henna. Classical physicians used safflower in medicines. Dioscorides, for example, states that safflower (*Kinkos*) is a purgative which did not have a good effect on the stomach.<sup>1239</sup>

**PU:** False safflower figures in a list of *materia medica* (T-S Ar.35.229; T-S NS 306.115) and as a prescription (T-S Or.1080.1.87).

**TU:** *Carthamus* is mentioned in lexica of *materia medica* (T-S Ar.39.351r; T-S AS 184.234).<sup>1240</sup>

**OMU:** The physician Assaf writes that the seeds serve among other things as a medication for the womb, to treat kidney pains, heart problems and poisonings, to open obstructions in the urinary tract, and to cause diarrhoea.<sup>1241</sup> According to al-Kindī, the false safflower is a component in a medication for the external treatment of bruising.<sup>1242</sup> Maimonides reports the use of the safflower seed to prepare a medication against constipation; it was also considered a purgative and had the ability to arouse sexual desire. It was a hot and dry drug and it was used very extensively.<sup>1243</sup> al-Qazwīnī cites Ibn Sīnā who describes the use of the seeds to purify the chest, to refine the voice, to treat infections in the large intestine, and to reduce sexual desire. The flowers could remove freckles and treat other skin diseases (such as leukoderma albinum).<sup>1244</sup>

**TM:** The Arabs of Israel use the plant to prepare 'the fortieth medicine' which also serves them as a preventive means and a dressing for wounds.<sup>1245</sup> The Jews of Iraq listed safflower among the foods that increase sperm and used it to prepare an enema for a person whose

<sup>1237</sup> Maimonides, Glossaire, no. 300; Issa, p. 40, no. 16; Dinsmore & Dalman, no. 1027; Leclerc, nos. 26, 370, 2119.

<sup>1238</sup> Chevallier, p. 181.

<sup>1239</sup> Dioscorides, IV.190.

<sup>1240</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1241</sup> Assaph, IV, 407.

<sup>1242</sup> al-Kindī, no. 122.

<sup>1243</sup> Maimonides, Regimen, 3:2; Maimonides, Aphorisms, 9:70; 15:38; 20:86; 21:75.

<sup>1244</sup> al-Qazwīnī, p. 257. Cf. Ibn Sīnā, p. 419.

<sup>1245</sup> Krispil, p. 1305.

tongue was caught.<sup>1246</sup> The Jews of Morocco used the flowers to treat body swellings, while the Jews of North Africa used the crushed leaves and stems to cure haemorrhoids, and the oil produced from the seeds to treat rheumatism and eye infections.<sup>1247</sup> In Iran and Iraq the plant serves as a purgative drug, to relieve pains, to accelerate menstruation, to arouse sexual desire, and is used to treat joint infections. Safflower oil is used to treat sprains.<sup>1248</sup> In Egypt, the seeds are used as a carminative, as a stimulant for sexual desire, and as purgatives.<sup>1249</sup>

**TAI:** The plant is mentioned in Genizah documents as a dyeing agent, a cosmetic, for food colouring, as an addition to henna, and as a commodity in international trade, for example, from Mahdiyya to Cairo.<sup>1250</sup>

## Salep

Orchid, *Orchis* sp. (Orchidaceae), A: **saḥlab, musta'jala, būzaydān**<sup>1251</sup>

**D&H:** Perennial herb (60 cm), with narrow leaves, flowering stem that bears purple flowers, two tuberous roots, one larger than the other.<sup>1252</sup> The source of the scientific name is Greek, and it means testicle.<sup>1253</sup> The liquefied ground bulbs were drunk with milk.<sup>1254</sup> Different species of orchids were known from the time of Dioscorides who attributed to them the qualities of a love potion and the ability to cure diseases such as herpes and various infections, and he also thought that they were a soothing drug and a healthy, strengthening food.<sup>1255</sup> Maimonides insisted that *būzaydān* is not orchid bulbs but a kind of tree brought from India.<sup>1256</sup>

**PU:** Salep features in 2 prescriptions: for fever (T-S NS 306.177) and for the small atrifal (T-S Ar.42.67), and in a list of *materia medica* sold after the death of the pharmacist (T-S AS 152.131).

<sup>1246</sup> Ben-Yakov, pp. 150, 362.

<sup>1247</sup> Krispil, p. 1305.

<sup>1248</sup> Hooper, p. 94. Content of substances in al-Rawi & Chaakravarty, p. 23.

<sup>1249</sup> Ducros, p. 92, no. 161, p. 103, no. 180.

<sup>1250</sup> Goitein, Society, I, p. 120, III, p. 778, IV, p. 230; Gil, Kingdom, III, p. 253, no. 374, IV, p. 610, no. 805.

<sup>1251</sup> Identification and additional names: Maimonides, Glossaire, no. 391; Issa, p. 129. Cf. Dinsmore & Dalman, no. 1619; Leclerc, nos. 366, 801, 1733.

<sup>1252</sup> Chevallier, p. 240.

<sup>1253</sup> Chizik, p. 230. See also Feliks, Shevi't, p. 166; Feliks, Yerushalmi, p. 104.

<sup>1254</sup> On the eating of orchid bulbs see Chizik, p. 836.

<sup>1255</sup> Dioscorides, III.141–142.

<sup>1256</sup> Maimonides, Glossaire, no. 56.

**TU:** Salep is mentioned in medical books in a recipe (unknown uses; T-S Ar.45.67) and in other books on pediatrics (T-S Ar.45.20), on sex (T-S Ar.41.75), on poisons (T-S Ar.41.116), and on *materia medica* (T-S Ar.44.153; T-S Ar.44.204; T-S Ar.45.14).<sup>1257</sup>

**OMU:** Maimonides says that the ‘testicles of the fox’ were used to prepare a medication to strengthen respiration, to revive the spirits, to arouse sexual desire, to stiffen the penis, and increase the sperm.<sup>1258</sup> Ibn al-Bayṭār, in his entry ‘*mustaʿjala*’, describes the pungent taste of salep, and how women, who used its roots to get fat and to improve their complexion, enhanced its taste and quality by the addition of soup and milk.<sup>1259</sup> Dāwud al-Anṭākī, notes its use against spasms and paralysis, to increase fertility in women, and for fattening.<sup>1260</sup>

**TM:** In the East a drink (or food) is made from orchid bulbs known as ‘*saḥlab*’. The extract derived from the bulbs is called salep and is used to prepare beverages, foods, sweets, and medicines.<sup>1261</sup> The bulbs of the species *Orchis latifolia* are used in Iraq and Iran to strengthen the nerves, to treat hoarseness, and for nourishment. The species *Orchis mascula* serves to arouse desire, to constrict, to stimulate, to calm the nerves, and to cure diarrhoea.<sup>1262</sup>

**TAI:** According to Ibn al-Bayṭār, ‘*mustaʿjala*’ is a well known plant in the ‘neighborhoods’ of Egypt, growing in the environs of Alexandria and transported to the cities in the Levant. It was used by the physicians of Egypt and the al-Shām region instead of ‘*būzaydān*’.<sup>1263</sup>

## Sandalwood

White, *Santalum album* (Santalaceae), **A: sandal**<sup>1264</sup>

**D&H:** A tree native to tropical Asia and cultivated in those parts. The wood is fragrant, the leaves are oval, and the flowers are yellow. Red

<sup>1257</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>1258</sup> Maimonides, *Sexual*, 1:5; 10. Compare Ibn Sina, p. 454; al-Biruni I, 146–147.

<sup>1259</sup> Ibn al-Baytar, *al-Jami*, IV, p. 15; Leclerc, no. 2130.

<sup>1260</sup> al-Anṭākī, p. 141.

<sup>1261</sup> Uphof, p. 376; *Plants & Animals*, XI, 322.

<sup>1262</sup> Hooper, pp. 173–174; al-Rawi & Chaakravarty, p. 70, with content of active substances. Compare Grieve, pp. 602–605; Chizik, p. 730.

<sup>1263</sup> Ibn al-Baytar, *al-Jami*, IV, p. 15; Leclerc, no. 2130.

<sup>1264</sup> Issa, p. 150, no. 11.

sandalwood, *Pterocarpus santalinus* (Fabaceae), is native to southern India and the Philippines, and is used mainly for industry.<sup>1265</sup>

**PU:** Sandalwood features in a list of *materia medica* (T-S NS 306.115) and in a prescription for unknown uses (T-S Ar.35.59).

**TU:** Sandalwood is also mentioned in lexica of *materia medica* (T-S Ar.43.317; T-S Ar.39.375), one written by an unnamed pharmacist known as al-Dimashqī (the Damascene; T-S Ar.39.65); the other was extracted from al-Kindī's 'The book of the chemistry of perfume' (T-S Ar.41.29). It is also found in recipes for the treatment of quartan fever and burning black bile and phlegm (T-S NS 306.74). Red sandalwood appears in a medical book in a recipe for a powder for the treatment of diarrhoea (T-S Ar.40.179r), and with white sandalwood as part of recipe (a potion) for unknown uses (T-S AS 151.56v); yellow sandalwood is found in a recipe for unknown uses (T-S AS 170.136).<sup>1266</sup>

**OMU:** al-Kindī used white sandalwood for liver and ulcers, in tooth powder, and in a honey syrup. White, red, and yellow sandalwood are components in poultices for the liver and the spleen, and in an application for erysipelas.<sup>1267</sup> Ibn al-Bayṭār cites other sources such as Ibn Sīnā and al-Rāzī writing that it was used for the heart, as an astringent, as a coolant, and in a bath.<sup>1268</sup>

**TM:** In Iran oil of white sandalwood is used mainly for its antiseptic action in the genital-urinary tract and for dysentery.<sup>1269</sup> In modern Egypt red sandalwood is used as astringent and for intestinal ailments.

**TAI:** Sandalwood was exported from Egypt to Sicily (Palermo), according to a merchant's document.<sup>1270</sup>

## Savoury

*Satureja thymbra* (Lamiaceae), **A:** *ṣa'tar (za'tar, sa'tar) fārisī*<sup>1271</sup>

**D&H:** Savoury is an aromatic bush, growing mostly on hills on limestone earth. The plant is erect, up to a height of 30–50 cm, and has many stems. The whole plant gives off a strong scent of ethereal oils. The leaves

<sup>1265</sup> Wren, p. 242.

<sup>1266</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1267</sup> al-Kindi, p. 298, no. 183.

<sup>1268</sup> Ibn al-Baytar, al-Jami, III, p. 89.

<sup>1269</sup> Hooper, pp. 169–170.

<sup>1270</sup> Gil, Kingdom, II, p. 853, no. 284, III, p. 865, no. 562.

<sup>1271</sup> Maimonides, Glossaire, no. 319; Issa, p. 163, no. 10.



are long and oval-shaped, and the lavender-pink flowers grow in clusters.<sup>1272</sup> In ancient Rome the cultivated plant was used to make a love potion. Classical physicians such as Pliny and others recommended the use of the plant for cancerous growths.<sup>1273</sup> Dioscorides describes the wild variety *Thumbra* and mentions the cultivated one, asserting that it has limited potency.<sup>1274</sup>

**PU:** Savoury features in 3 prescriptions: for unknown uses (T-S Ar.41.81; T-S AS 173.3) and treating fever (T-S AS 155.277).

**TU:** Savoury is mentioned in medical books (T-S Ar.40.5; T-S Ar.41.78), on dermatology (T-S AS 177.540), on ophthalmology (T-S NS 222.18), on *materia medica* (T-S Or.1081.1.21; T-S Ar.45.51), and in recipes for stomach ailments and colic (T-S Ar.45.28; unknown uses: T-S Ar.41.81).<sup>1275</sup>

**OMU:** According to the physician Assaf, the plant is a 'slender tree' called in Greek 'oregani', in Aramaic 'zifā rabbā', and in Latin 'saturaya'. It is effective in treating kidney pains and in dissolving kidney stones, for urine flow, for opening blockages in the ears, for treating the intestines, and for eye diseases.<sup>1276</sup> al-Kindī gives examples of various kinds of thyme: 'sa'tar fārisi' is a component in a medication for external treatment of growths on the neck.<sup>1277</sup> Ibn al-Bayṭār lists uses such as emmenagogue, a diuretic, opening blockages, curing disorders in the breathing system, eliminating intestinal worms, improving the eyesight, cleansing the liver and stomach, and inducing diarrhoea.<sup>1278</sup> al-Qazwīnī cites Ibn Sīnā describing its use in straightening curly hair and improving the eyesight.<sup>1279</sup>

**TM:** The Arabs of Israel generally use 'sathra' to reduce swellings in the legs, to relieve arthritic pains, to disinfect open wounds, and to cure palsy.<sup>1280</sup> The plant also serves as a general strengthener, a purgative, to treat dizziness, caries, and pains in the heart, to open blockages in the urinary and breathing tracts, to cure colds, to relieve stomachache,<sup>1281</sup> and also

<sup>1272</sup> Description in Plants & Animals, XI, p. 77.

<sup>1273</sup> Hartwell, p. 278.

<sup>1274</sup> Dioscorides, III.45.

<sup>1275</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1276</sup> Assaph, IV.411–412.

<sup>1277</sup> al-Kindī, no. 70. Cf. al-Biruni, I, pp. 205–206.

<sup>1278</sup> Ibn al-Baytar, al-Jami, II, pp. 2–3; Leclerc, no. 548. Cf. al-Antaki, p. 113.

<sup>1279</sup> al-Qazwīnī, p. 244. Cf. Ibn Sina, pp. 314–315.

<sup>1280</sup> Dafni, Edible, p. 105.

<sup>1281</sup> Palevitch et al., p. 141 which gives the content of active substances. Cf. Grieve, pp. 718–719.

as immunization against snakebite.<sup>1282</sup> Different varieties of savoury are used around the world to the present day as drugs to dispel gases and induce perspiration, and as expectorants.<sup>1283</sup>

**TAI:** Ibn al-Bayṭār mentions elsewhere that ‘thumbarā’ is ‘za‘tar al-fārisī’, a well known plant among the Spaniards. Also, ‘this type of thin-leaved za‘tar is found in the cultivated areas of Egypt and in their orchards, as well as in al-Shām.’<sup>1284</sup>

## Sea Squill

*Urginea maritima* (Alliaceae), **A:** **baṣal al-far‘**, **’unṣul**, **baṣal al-fār**, **ashqīl**<sup>1285</sup>

**D&H:** Perennial (70 cm), growing from a large white or red bulb. Has a single flowering stem, a rosette of large basal leaves and a dense spike of white flowers.<sup>1286</sup> The sea squill, especially the bulb, was used in ancient Mesopotamia, in the Assyrian and Babylonian cultures, as a medicine for the ears and eyes.<sup>1287</sup> Hippocrates states that the sea squill is a medicine against phlegm and to cure wounds. Dioscorides reports that *Skilla* is a medication to treat fissures in the legs, snakebite, intestinal problems, and obstructions in the urinary tract.<sup>1288</sup>

**PU:** Sea squill features in a prescription for unknown uses (T-S NS 194.70).

**TU:** Sea squill is also mentioned in medical books (T-S NS 90.30; T-S NS 90.71; T-S AS 181.35), on ophthalmology (T-S Ar.44.137; T-S AS 179.59), on dermatology (T-S Ar.42.22), on *materia medica* (T-S Ar.39.357; T-S Ar.44.153; T-S Ar.44.204; T-S AS 179.329; T-S NS 306.94), on sexual medicine (T-S Ar.41.75) and in pharmacopoeias (T-S Ar.40.91; T-S Ar.45.19; T-S Ar.45.33; T-S NS 164.62; T-S NS 164.152; T-S NS 222.25).<sup>1289</sup>

<sup>1282</sup> Dafni, *Edible*, p. 105.

<sup>1283</sup> Uphof, pp. 472–473.

<sup>1284</sup> Ibn al-Baytar, *Tafsir*, p. 224.

<sup>1285</sup> Maimonides, *Glossaire*, no. 60; Issa, p. 164, no. 11; Dinsmore & Dalman, no. 1711; Ibn al-Baytar, *al-Jami*, I, 97; Leclerc no. 298.

<sup>1286</sup> Chevallier, p. 278.

<sup>1287</sup> al-Kindi, p. 230.

<sup>1288</sup> Dioscorides, II.202. More on the use of the plant in ancient cultures is in Palevitch et al., pp. 76–77.

<sup>1289</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

**OMU:** al-Kindī reports the use of the plant to cure malaria, jaundice, and diseases of the intestines and liver.<sup>1290</sup> al-Qazwīnī in his entry cites Ibn Sīnā asserting that the ointment made from it straightens the hair and is effective in treating epilepsy, depressions, the thigh sinew, and partial paralysis. It was also used to stretch the jaw, to stabilize loose teeth, to sweeten the breath, and to treat jaundice.<sup>1291</sup> Dāwud al-Anṭākī reports many medical uses for the sea squill, for example, as a drug against poisoning and to help extract pus; to treat chest pains, lung diseases, mental distress, exhaustion, oedema, infection in the spleen, kidney stones, obstructions in the urinary tract, joint diseases, ear and tongue ailments, jaundice, headaches, migraines, and infection of the large intestine. It also improved virility, dispelled gases, and strengthened the teeth and gums. al-Anṭākī writes later, 'It is claimed to be effective against all diseases except malaria. Its substitute is garlic, but the truth is it has no substitute.'<sup>1292</sup>

**TM:** The Arabs of Israel made use of sea squill to cure wounds on the scalp, to treat nerve pains in the legs and the spine, to cure haemorrhoids and skin diseases, to knit fractures, and to treat deafness. In the Mediterranean basin area the bulb was used to treat fever, jaundice, stomachache, skin growths, and joint pains. It was also considered a substance that provoked spitting and vomiting, a diuretic, a stimulant for heart activity, and a cure for rheumatism. The seeds were considered a stimulating drug.<sup>1293</sup> In Iraq and Egypt the bulb was also a drug considered an expectorant, a diuretic, and a heart energizer, as well as being used to treat skin irritations. The seeds were considered a stimulating drug and a purgative, and as lowering fever.<sup>1294</sup> In Europe it had similar uses.<sup>1295</sup> The sea squill bulb also acted as poison against mice, fleas, and other pests, and the Jews of Kurdistan made glue out of it.<sup>1296</sup>

<sup>1290</sup> al-Kindi, no. 113.

<sup>1291</sup> al-Qazwīnī, p. 239.

<sup>1292</sup> al-Antaki, pp. 76–77. Cf. Ibn al-Baytar, al-Jami, III, pp. 138–140; Leclerc, no. 1593.

<sup>1293</sup> Palevitch et al., pp. 76–77.

<sup>1294</sup> Ducros, p. 22, no. 40; al-Rawi & Chaakravarty, p. 95, with contents of active substances.

<sup>1295</sup> Grieve, pp. 766–769, including contents of active substances; Uphof, p. 535.

<sup>1296</sup> Dafni, Mandrakes, p. 32; Krispil, p. 306.

### Service tree

*Sorbus domestica* = *Pyrus sorbus* (Rosaceae), **A:** **ghabīra**<sup>1297</sup>

**D&H:** A common tree throughout the Levant, mainly in Iraq and Syria. Dioscorides regarded the service tree as good binder for the intensesness.<sup>1298</sup>

**PU:** The service tree appears in a prescription probably for haemorrhoids (T-S Ar.40.53).

**TU:** The service tree is also mentioned in general medical books (T-S AS 179.47).<sup>1299</sup>

**OMU:** al-Kindī used it in a drug for throat and mouth pustules.<sup>1300</sup> Ibn Sīnā recommends the use of the tree for the treatment of ‘hot’ coughs and to prevent vomiting and diarrhoea.<sup>1301</sup> Ibn al-Bayṭār mentions the service tree as facilitating the action of the bile, and as good for headache and against drunkenness, citing al-Rāzī.<sup>1302</sup>

### Silkworm

*Bombyx mori* (Bombycidae), cocoons and product, **A:** **abrīsim, ibrīsim, ḥarīr, khazz** (*cloth*)<sup>1303</sup>

**D&H:** The silkworm is a night butterfly that lives on the mulberry tree (as a host).<sup>1304</sup> At the end of the larval period it spins around itself a white cocoon made of a single thread 300–500 m in length.<sup>1305</sup> The breeding of silkworms was already known in China in the third millennium BCE. The method of breeding was a professional secret monopolized by the Chinese, who marketed the final product—silk fabric. However, silkworm eggs were smuggled by monks to the West (Constantinople) at the end of the 6th century. Later silkworm breeding became an important industry in southern Europe, Syria, and Lebanon.<sup>1306</sup>

<sup>1297</sup> Issa p. 151, no. 18, Amar, Agricultural, p. 241; Amar & Buchman, p. 171; Maimonides, Glossaire, no. 405.

<sup>1298</sup> Dioscorides, I.173.

<sup>1299</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>1300</sup> al-Kindī, p. 310, no. 216.

<sup>1301</sup> Ibn Sīnā, I, p. 467.

<sup>1302</sup> Ibn al-Bayṭār, al-Jami, III, p. 148.

<sup>1303</sup> Ghaleb, I, p. 420, no. 8669.

<sup>1304</sup> See entry ‘Mulberry’ in this chapter.

<sup>1305</sup> Plants & Animals, III, pp. 272–273; Bodenheimer, Entomology, pp. 116–117.

<sup>1306</sup> Plants & Animals, III, p. 272.

**PU:** Silkworm features in 2 prescriptions (T-S Ar.39.184; T-S Ar. 43.338).

**TU:** Silkworm is also mentioned in books: in recipes for palpitation and for a general tonic (T-S Ar.42.199; T-S Ar.43.320), in medical books (T-S Ar.44.149) on *materia medica* (T-S Ar.42.73), and in pharmacopoeias (T-S Ar.40.91; T-S Ar.41.90; T-S Or.1080.3.39).<sup>1307</sup>

**OMU:** al-Anṭākī describes medical uses of silkworm: the larva ash cures wounds, 'its moisture' removes scars, the ointment produced from cooking the larva in sesame oil is used to cure swellings and throat infections, and the drink from this serves to treat a rapid pulse.<sup>1308</sup> Also mentioned is the 'dūd al-zabal' as a general medication to treat haemorrhoids, stomach diseases, and toothache and stomach-ache.<sup>1309</sup>

**TM:** The Jews of Iraq used silkworm as a component in a general medication to strengthen the body.<sup>1310</sup> In Iran and Iraq silkworm cocoons were used to stop haemorrhages, to strengthen, and to prevent diarrhoea. The larva ash taken internally stops excessive menstruation and chronic diarrhoea. Sometimes, chopped up silk threads are used to treat impotency.<sup>1311</sup> In Pakistan, medical use is made of the cocoons and the silkworm to treat heart palpitations, and it is also used as a drug to stimulate the appetite. The larva ash serves for treating digestive problems and is used as a component in an eye ointment. The meat of chicks fed on the silkworm larvae serves to stimulate a strong appetite. The dead larva in the cocoon is used to treat breathing trouble, cough, cold, asthma, and bronchitis.<sup>1312</sup>

**TAI:** Dāwud al-Anṭākī writes, 'This worm is found in cold countries and in temperate climates such as Persia and the al-Shām region and in all the area between them'. Moreover, 'The eggs are fastened to the leaves from which the larvae emerge in March which, in the region of al-Shām, is the season for the blossoming of the mulberry trees'. The larva feeds on mulberry leaves for forty days, grows strong, and finally spins the cocoon.'<sup>1313</sup>

<sup>1307</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1308</sup> Ibid. Cf. entry 'Abrisaṃ' in Ibn al-Baytar, al-Jami, I, pp. 7–8; Leclerc, no. 8; entry 'Dud al-harir' in Ibn al-Baytar, al-Jami, II, pp. 17–18; Leclerc, no. 657.

<sup>1309</sup> al-Antaki, p. 159. Cf. Ibn al-Baytar, al-Jami, II, pp. 119–120; Leclerc, nos. 971–978.

<sup>1310</sup> Ben-Yakov, p. 352.

<sup>1311</sup> Hooper, pp. 195–196.

<sup>1312</sup> Vohora & Khan, p. 8.

<sup>1313</sup> al-Antaki, p. 159.

## Silver

Ag, **A:** *fiḏḏa*

**D&H:** Silver is common in nature pure as well as in other forms such as chloride—AgCl and sulphide—Ag<sub>2</sub>S. It was used by humans from early times mainly as a means of payment, for making coins and jewellery, and in medicine.

**PU:** Silver figures in 3 prescriptions for unknown uses (T-S Ar.39.274; T-S Ar.43.338; T-S AS 214.96).

**TU:** Silver is also mentioned in medical books on ophthalmology (T-S NS 222.18 [eye drops for treatment of diseases affecting the eyelids]), on dermatology (T-S Ar.45.49), in pharmacopoeias (T-S NS 222.66), in quasi-medicine (T-S Ar.39.302; T-S Ar.44.4; T-S NS 31.6; T-S AS 182.288), and in other fragments (T-S NS 297.56). Silver appears in quasi-alchemical recipes (T-S K14.12, T-S Ar.44.59, T-S 16.270v, T-S AS 182.288). Scoria of silver is found in a recipe to treat trachoma and ulcer (T-S AS 183.201).<sup>1314</sup>

**OMU:** Both al-Qazwīnī and R. Nathan ben Yoel Falaquera describe the use of silver for the treatment of skin diseases, heart disorders, and haemorrhoids, and to improve bed breath and as diuretic.<sup>1315</sup>

**TAI:** Silver was a common commodity exported to Egypt from the Maghreb and Sicily, and is therefore mentioned in many fragments mainly of traders' letters referring to Palermo, Cairo, Alexandria, Tyre, and North Africa.<sup>1316</sup>

## Snail

*Helix sp.* (Helicidae), **A:** *ḥalazūn*<sup>1317</sup>

**D&H:** The snail is mentioned in the Bible (Psalms 58:9). Dioscorides describes the snail (*Kochlais*) and its medical uses, such as treating diseases of the stomach, skin, teeth, eyes, and rheumatism, stimulating menstruation, curing tumours, and as an emetic.<sup>1318</sup>

<sup>1314</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1315</sup> al-Qazwīnī, p. 183; Amar & Buchman, p. 194.

<sup>1316</sup> Gil, Kingdom, III, pp. 272, 274, no. 508, IV, p. 947; see index for 17 more documents; Goitein, Society, I, pp. 154–155, 233, IV, pp. 202–207; Ben-Sasson, pp. 105–106.

<sup>1317</sup> Ghaleb, I, p. 319, no. 6796.

<sup>1318</sup> Dioscorides, II.11.

**PU:** Snail features in 2 prescriptions: one for unknown uses (T-S Ar.44.162) and the other, for caries, is a dentifrice powder prepared from gigantic swallow and burnt snail (T-S AS 182.77).

**TU:** Snail is also mentioned in books (T-S Ar.44.209), on dermatology (T-S Ar.43.114), and *materia medica* (T-S Ar.39.208).<sup>1319</sup>

**OMU:** al-Kindī tells about the use of the ‘ṣadaf al-ḥalazūn’ (burnt snail), a component in an ointment for skin diseases.<sup>1320</sup> Maimonides states that the shell of the ‘ḥalazūn’ is a purgative, but that its body causes constipation. Dried snail was a component in medication (ointment) to maintain penile erection.<sup>1321</sup> Ibn al-Bayṭār, in his entry ‘ḥalazūn’, notes that the classical and Arabic physicians mention it. He lists its medical uses such as treating intestinal wounds, joint infections, diseases of the ears and eyes, skin diseases, and dog bite. He also describes its use in inducing vomiting and stimulating menstruation.<sup>1322</sup>

**TM:** The Bedouin in Sinai use the snail called ‘abū sab‘a’ (snail of seven fingers) against impotence.<sup>1323</sup> In Pakistan, a type of burnt snail is used to disinfect, to stop haemorrhages, and to treat the spleen and stomach.<sup>1324</sup>

## Soap

### A: ṣābūn

**D&H:** A solid or liquid substance made of fatty acids (olive oil or castor oil) boiled together with ash and vegetal alkaline substances. The soap becomes solid with the addition of lime.<sup>1325</sup> In modern times the soap imported from the city of Aleppo and Nablus was especially famed.<sup>1326</sup>

**PU:** Soap features in a list of *materia medica* (T-S Ar.39.139) and in 3 prescriptions for unknown uses (T-S AS 177.39; T-S Ar.42.20; T-S AS 214.96).

**TU:** Soap is also mentioned in a lexicon of *materia medica* (T-S Ar.39.273), pharmacopoeias (T-S NS 222.67), in quasi-medicine (T-S NS 222.41), and other fragments (T-S NS 90.46; T-S AS 183.131).<sup>1327</sup>

<sup>1319</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>1320</sup> al-Kindi, no. 31. Cf. Ibn Sina, p. 421.

<sup>1321</sup> Maimonides, Aphorisms, 21:29; Maimonides, Sexual, 13:1.

<sup>1322</sup> Ibn al-Baytar, al-Jami, II, p. 29; Leclerc, no. 690. Cf. al-Antaki, p. 127.

<sup>1323</sup> Levey, Beduins, p. 86.

<sup>1324</sup> Vohora & Khan, p. 5.

<sup>1325</sup> Hill, p. 191.

<sup>1326</sup> al-Dimashqi, p. 200; Ben-Yakov, p. 580.

<sup>1327</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

**OMU:** Dāwud al-Anṭākī recommends the medical use of soap to eliminate mucus, to relieve infections of the large intestine, and to treat joint pains and skin diseases. Internal use of soap causes diarrhoea, eliminates intestinal worms, increases menstrual blood flow, causes miscarriage, and is poisonous. But the editor adds that soap also had negative effects such as burning the skin, causing putrescent wounds, and accelerating the growth of white hairs.<sup>1328</sup>

**TM:** The Bedouin in Sinai washed wounds with soap before stitching them or treating them with ointment.<sup>1329</sup> The Jews of Iraq used soap to treat scabies on the heads of infants, to treat a closed putrescent wound, and as an ointment to treat leprosy.<sup>1330</sup> Internal uses were made of soap such as to dissolve gallstones and to insert as a suppository to cleanse the intestines, as well as external uses such as treating chronic gonorrhoea, stye, dryness of skin, rash, and as an enema against constipation.<sup>1331</sup> Yemenite Jews used soap to disinfect the body, to disinfect wounds, clothes, and utensils, and also to prepare compresses and dressings to bind up wounds.<sup>1332</sup>

**TAI:** According to Genizah fragments soap was widely traded in the Mediterranean region, mainly in Syria, Sicily, Spain, and North Africa, and was imported by Egypt.<sup>1333</sup> al-Muqaddasī describes the soap production in the Land of Israel and states that Ramlah was an important centre in this activity.<sup>1334</sup> Additional evidence of this commerce, in the Land of Israel, more especially Tyre and Ramlah, can be derived from another document of the same period.<sup>1335</sup> In a document from 1222, soap is listed with merchandise exported from Beirut.<sup>1336</sup> At the beginning of the 14th century al-Dimashqī<sup>1337</sup> reports that in Shechem (Nabulus) excellent soap was produced from olive oil and it was exported all

<sup>1328</sup> al-Antaki, pp. 221–222. Cf. Ibn al-Baytar, al-Jami, III, pp. 76–77; Leclerc, no. 1383.

<sup>1329</sup> Levey, Beduins, p. 72.

<sup>1330</sup> Ben-Yakov, pp. 110, 268, 282.

<sup>1331</sup> Ibid., pp. 76, 145, 179, 213.

<sup>1332</sup> Reiani, no. 180.

<sup>1333</sup> Gil, III, p. 274, no. 508, Gil Kingdom, IV, p. 437, no. 749, p. 581, no. 792, p. 932; 40 documents dealing with soap; Goitein, Society, I, pp. 154, 184, IV, p. 140; see also indices.

<sup>1334</sup> al-Muqaddasi, p. 180.

<sup>1335</sup> Gil, III, p. 274, no. 508.

<sup>1336</sup> Tafel & Thomas, II, p. 233.

<sup>1337</sup> al-Dimashqi, p. 200.



over Mediterranean region.<sup>1338</sup> In 1420, soap is mentioned as an export product from Tripoli and Beirut to Europe through Alexandria.<sup>1339</sup>

### Spinach

*Spinacia oleracea* (Amaranthaceae = Chenopodiaceae), **A:** **asfīnāj, isfānāj**<sup>1340</sup>

**D&H:** Annual winter vegetable that originated in Asia, with big fleshy leaves; considered a healthy and nutritious vegetable due to high mineral and vitamin content.<sup>1341</sup>

**PU:** Spinach figures in 3 prescriptions: for an invalid's diet (T-S Ar.42.189), for unknown uses (T-S Ar.41.110), and twice in a family one (T-S NS 223.82–83).

**TU:** Spinach is also mentioned in medical books (T-S Ar.41.137; T-S AS 183.312), on fevers (T-S Ar.44.208), on *materia medica* (T-S Ar.43.251; T-S Ar.44.76; T-S Or.1080.2.74), on quasi-medicine (T-S Ar.11.17), in recipes for unknown uses (T-S Ar.34.217; T-S NS 223.83), and in other fragments (T-S Ar.41.167).<sup>1342</sup>

**OMU:** Maimonides describes the plant as useful for various abscesses.<sup>1343</sup> R. Nathan ben Yoel Falaquera records its use for the treatment of respiratory diseases and intestinal ailments.<sup>1344</sup>

### Spiny-tailed lizard

*Uromastix aegypticus* (Agamidae), **A:** **ḏabb**

**D&H:** A large lizard (up to 75 cm) weighing up to 3 kg. Its natural habitat is deserts regions. The tail is covered by whorls of spiny scales. The Bedouins eat its meat and eggs.<sup>1345</sup>

<sup>1338</sup> Little, pp. 243, 361–363, 366, 369.

<sup>1339</sup> Piloti, p. 136.

<sup>1340</sup> Issa, p. 173, no. 14.

<sup>1341</sup> Lev and Amar, *Ethnic*, p. 250.

<sup>1342</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1343</sup> Maimonides, *Aphorism*, 20, 84.

<sup>1344</sup> Amar & Buchman, p. 114.

<sup>1345</sup> *EI*, II, p. 70.

**PU:** Excrement of spiny-tailed lizard features in a list of *materia medica* (T-S NS 305.38).

**TU:** Spiny-tailed lizard is also mentioned in a medical book in a recipe for squint, and its bile appears as an ingredient in collyria (T-S Ar.43.80).<sup>1346</sup>

**OMU:** al-'Umari records the use of the heart of the spiny-tailed lizard for the treatment of the heart, and sets out further useful medicinal uses of other body parts (skin, blood, flesh).<sup>1347</sup>

## Spurge

Milk-wort, *Euphorbia* sp. (Euphorbiaceae), **A:** **afarbiyūn, farbiyūn**<sup>1348</sup>

**D&H:** Milky juice, bitter and toxic, that drips from the plant when it is injured. The Latin name derives from Euphorbus, the physician of King Juba of Mauritania (1st cent. BCE), who used the juice as a remedy.<sup>1349</sup> Dioscorides describes twelve species of spurge and mentions their medical uses, especially noting that the plant is a purgative substance.<sup>1350</sup>

**PU:** Spurge features in a list of *materia medica* (T-S Ar.34.341) and in 2 prescriptions, one for linctus for the treatment of cough (T-S AS 148.22) and the other for chewing gum (T-S Ar.42.20).

**TU:** Spurge is also mentioned in books: in a preparation of pastes (T-S AS 182.37). Several species of spurge including *Euphorbia lathyris* and *Euphorbia pithyusa* are also mentioned in lexica of *materia medica* (T-S Ar.40.60; T-S AS 166.126), in a recipe for unknown uses (T-S NS 222.26), and in a prescription for unknown uses (T-S AS 167.36).<sup>1351</sup>

**OMU:** al-Kindī reports the use of the plant to treat putrescent wounds and mumps, and to cure insanity.<sup>1352</sup> al-Birūnī notes its uses, and emphasizes its toxicity.<sup>1353</sup> Maimonides mentions various uses of spurge and especially notes that it is a purgative substance. It was considered a hot

<sup>1346</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1347</sup> al-'Umari, XX, p. 64.

<sup>1348</sup> Maimonides, Glossaire, nos. 25, 178, 215, 366; Dinsmore & Dalman, no. 1542; Issa, pp. 78–80. A discussion of identity of various spurge species and their names in medieval sources is in Amar, Ibn al-Baytar, p. 63, n. 40.

<sup>1349</sup> Palevitch et al., p. 71.

<sup>1350</sup> Dioscorides, IV. 165–170, 177.

<sup>1351</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1352</sup> al-Kindi, nos. 136, 205.

<sup>1353</sup> al-Biruni, II, p. 65.

and dry drug.<sup>1354</sup> According to Ibn al-Bayṭār the plant serves to constrict the womb opening and prevent miscarriage by medications. He cites others reporting that the juice with the addition of oil is effective against paralysis when applied externally, but taken internally it can cause intestinal and stomach ulcers, and a high dosage could even cause death.<sup>1355</sup> Saladino d'Ascoli states that the gum resin is a hot and dry drug, and extremely powerful. He lists the inherent dangers (injurious to the heart, liver, and stomach) and its medical uses (soothing nerves and spasms). Another species was used mainly for its purgative properties.<sup>1356</sup>

**TM:** The Arabs of Israel take the milky juice internally to treat constipation, stomach-ache, and depression. Externally, the plant is used to remove bunions and cure wounds. The boiled seeds are a medication against fright and brain concussion.<sup>1357</sup> The Bedouins use the root to treat constipation and to cure bunions.<sup>1358</sup> Many varieties of spurge in the world are used to treat problems of the respiratory system (asthma, lung infection, cough, and allergies), intestinal worms, dysentery, syphilis, and problems of the digestive system.<sup>1359</sup> In Iraq various kinds of spurge are used that serve as poison as well as a purgative, as an expectorant and a diuretic, and to eliminate worms. It is also taken to cure dropsy, fever, malaria, asthma, heart disease, and cough.<sup>1360</sup> Similar uses and more of various local species of spurge are also made in Europe.<sup>1361</sup> Different varieties of the spurge are used throughout the world for various needs, not specifically for medical purposes, such as preparing chewing gum, rinsing the hair, preparing poison for arrows, dyeing the hair, and to make dyes.<sup>1362</sup>

<sup>1354</sup> E.g., Maimonides, *Aphorisms*, 13:3; 13:32; 21:85.

<sup>1355</sup> Ibn al-Baytar, *al-Jami*, III, p. 158; Leclerc, no. 1673. Cf. al-Antaki, p. 248.

<sup>1356</sup> Saladino, pp. 91, 93.

<sup>1357</sup> Palevitch et al., pp. 71–73.

<sup>1358</sup> Levey, *Beduins*, p. 79.

<sup>1359</sup> Uphof, pp. 214–216.

<sup>1360</sup> al-Rawi & Chaakravarty, p. 43, with contents of active substances.

<sup>1361</sup> Grieve, pp. 764–766.

<sup>1362</sup> Palevitch et al., pp. 72–73. See Uphof, pp. 214–216.

## Staphisagria

Stavesacre, lousewort, *Delphinium staphisagria* (Ranunculaceae), **A: zabīb al-jabal, ḥabb al-rās, mayūbazaj** (P)<sup>1363</sup>

**D&H:** A plant native to the Mediterranean region. The seeds are triangular, 2 cm long, grayish black colour.<sup>1364</sup> It grows in much of Europe and Asia today. The seeds were used, according to Dioscorides for phlegm, toothache, rheumatic gums, and itches.<sup>1365</sup>

**PU:** Staphisagria features in 2 prescriptions, one for the treatment of lice (T-S Ar.43.54) and the other for unknown uses (T-S NS 265.62).

**TU:** Staphisagria is also mentioned in medical books on ophthalmology, diseases of the head, and on *materia medica*, in pharmacopoeias (T-S Ar.43.88; T-S Ar.44.147; T-S Ar.44.204; T-S Ar.45.19; T-S NS 90.71) and in lexica of *materia medica* (T-S NS 224.146).<sup>1366</sup>

**OMU:** al-Kindī writes that staphisagria was used to treat epilepsy and neck pustules.<sup>1367</sup> R. Nathan ben Yoel Falaquera records its uses for the treatment of skin diseases, lice (with arsenic), and toothache (with vinegar).<sup>1368</sup>

**TM:** In modern Egypt the drug is used as an emetic, for pedicular infections, itch, and skin eruptions.<sup>1369</sup>

## Struthium

Soap-root, soapwort, *Gypsophila struthium* (Caryophyllaceae), **A: kundus**<sup>1370</sup>

**D&H:** According to Levey, struthium is not mentioned by Dioscorides or Galen.<sup>1371</sup>

**PU:** Struthium features in 2 lists of *materia medica* (T-S Ar.35.366; T-S Ar.39.487).

<sup>1363</sup> Issa, p. 69, no. 12; Maimonides, Glossaire, no. 155.

<sup>1364</sup> Wren, p. 258.

<sup>1365</sup> Dioscorides, IV.156.

<sup>1366</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1367</sup> al-Kindī, p. 273, no. 121.

<sup>1368</sup> Amar & Buchman, p. 209.

<sup>1369</sup> Ducros, p. 65, no. 113.

<sup>1370</sup> Issa, p. 90, no. 14.

<sup>1371</sup> al-Kindī, p. 328, no. 268.

**TU:** Struthium is also mentioned in medical books (T-S Ar.40.104; T-S Ar.43.180), on dermatology (T-S AS 177.540), in pharmacopoeias (T-S Ar.41.90; T-S Ar.44.193), and in other fragments (T-S Ar.38.67).<sup>1372</sup>

**OMU:** al-Kindī used the plant to treat insanity.<sup>1373</sup> R. Nathan ben Yoel Falaquera records its use for the treatment of skin diseases, to induce sneezing as well as miscarriage, and as a diuretic and a purgative.<sup>1374</sup>

**TAI:** Struthium is mentioned in a Genizah merchant's letter as a medical plant bought in Cairo.<sup>1375</sup>

## Sumac

Tanning Sumach, *Rhus coriaria* (Anacardiaceae), **A:** **summāq**<sup>1376</sup>

**D&H:** Tall (2 m)deciduous shrub, feathery hairy leaves, small flowers, bears small red lens-like fruit.<sup>1377</sup> The name of the plant in Arabic refers to the ripe fruit, as does the Latin name *Rhus*, from the Greek word for red. The tanning sumach served in Assyrian and Babylonian medicine as a medication against head itch, swellings, and bruises, and for relieving leg pains. The seeds were used as a medication for internal diseases.<sup>1378</sup> Dioscorides describes the use of the fruit (*Rous*) for dyeing the hair black and against dysentery and earache. The leaves were prepared for dressings for infections, bruises, and wounds, and to relieve gum pains.<sup>1379</sup>

**PU:** Sumach features in a list of *materia medica* (T-S NS 306.115).

**TU:** Sumach is also mentioned in medical books: in a recipe for unknown uses (T-S AS 179.26) and in other written by the unnamed pharmacist known as al-Dimashqī (the Damascene; T-S Ar.39.65); also in lexica of *materia medica* (T-S Ar.41.37; T-S AS 160.197; T-S AS 177.227r).<sup>1380</sup>

**OMU:** According to al-Kindī, sumach served as a component in medication to cure the gums and mouth sores, to abort the foetus, and to treat sore throat, and in eye ointments.<sup>1381</sup> Maimonides reports several medi-

<sup>1372</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1373</sup> al-Kindi, p. 328, no. 268.

<sup>1374</sup> Amar & Buchman, p. 196.

<sup>1375</sup> Gil, Kingdom, II, p. 676, no. 231; Dietrich, Egypt.

<sup>1376</sup> Maimonides, Glossaire, no. 277; Leclerc, nos. 428, 1226.

<sup>1377</sup> Lev & Amar, Ethinc, p. 60.

<sup>1378</sup> Levey, Chemistry, pp. 74, 104, 112; Campbell.

<sup>1379</sup> Dioscorides, I.147; Amar, Sumach.

<sup>1380</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1381</sup> al-Kindi, nos. 69, 71, 72, 89, 90, 212.

cal uses, especially in a medication against diarrhoea.<sup>1382</sup> Elsewhere he includes sumach among fatal drugs that one should guard against. This inclusion is surprising because of the wide use of sumach for medicine and food as is expressed by Maimonides in other books.<sup>1383</sup> According to Ibn al-Bayṭār, sumach resin of was a component in medications to improve the eyesight, to close wounds, and to relieve toothache.<sup>1384</sup> al-Qazwīnī also describes the use of the resin to treat toothache. The fruit served to strengthen the stomach, to prevent swellings and blood haemorrhages. The plant was also used to treat purulent wounds and haemorrhoids.<sup>1385</sup>

**TM:** The Arabs of Israel use the fruit of sumach to cure diarrhoea, toothache and gum pains, leg swellings, stomach pains, liver diseases, measles, and smallpox.<sup>1386</sup> In oriental communities concentrated sumach vinegar is used as a tested medicine to maintain regular bowel movement.<sup>1387</sup> The Jews of Iraq used the plant to cure ailments such as gum infections, stomach bleeding, haemorrhoids, eye diseases, and small sores all over the body, and to resume menstruation.<sup>1388</sup> In Iraq sumach leaves and bark were used to stop bleeding and to treat colds and dysentery. The leaves served as an aromatic and stimulating drug and the raw fruit was deemed toxic.<sup>1389</sup> In Egypt sumach was regarded as a constricting substance that was used to cure haemorrhoids and for disinfection. The species *Rhus oxycantha* was used by the Bedouins in the eastern desert area of Egypt to cure skin wounds.<sup>1390</sup>

**TAI:** al-Muqaddasī reports that the sumach was one of the fruits for which the district of Falasṭīn was famed.<sup>1391</sup> Tanning sumach was one of the exports of the Land of Israel, and its economic value can be assessed in merchants' letters found in the Genizah dating to 1060. In a letter from Ashkelon to Fustat (Egypt) the writer reports on a large consignment. It was also exported from Tripoli (Lebanon) or Egypt.<sup>1392</sup> In the

<sup>1382</sup> Maimonides, Aphorisms, 22:61.

<sup>1383</sup> Maimonides, Poisons, p. 186.

<sup>1384</sup> Ibn al-Baytar, al-Jami, III, p. 86; Leclerc, no. 1410. On medical uses of the plant see Ibn al-Baytar, al-Jami, III, p. 29; Leclerc, no. 1217. Cf. al-Antaki, p. 198.

<sup>1385</sup> al-Qazwīnī, p. 255.

<sup>1386</sup> Palevitch et al., p. 19.

<sup>1387</sup> Dafni, Mandrakes, p. 11.

<sup>1388</sup> Ben-Yakov, pp. 115, 122, 131, 174, 191, 199.

<sup>1389</sup> al-Rawi & Chaakravarty, p. 81.

<sup>1390</sup> Ducros, p. 73, no. 128; Osborn, p. 171.

<sup>1391</sup> al-Muqaddasi, p. 186.

<sup>1392</sup> Gil, III, pp. 187–188, no. 487, p. 201, no. 491.

Middle Ages sumach was traded around the Mediterranean shores from Syria to Egypt and Sicily.<sup>1393</sup>

### Sweet clover

White melilot, *Melilotus albus* (Fabaceae), **A:** *iklil al-malik*<sup>1394</sup>

**D&H:** Sweet clover is a wild annual or biennial plant, tall and erect (up to 2 m) that grows in damp habitats. Its leaves have triple leaflets with toothed margins, its flowers are white, and the ripe fruit is black or brown. In Israel there are six species of clover, but only the white variety is a medicinal plant.<sup>1395</sup> Some researchers have studied the various names and identifications of this plant.<sup>1396</sup> Most of the sources mentioned here describe varieties of the sweet clover species. Some of them describe the varieties used as remedies.<sup>1397</sup> In his dictionary, Issa identifies 'ray'an' with white melilot<sup>1398</sup> while the 'iklil al-malik' and 'melilutus' are identified with yellow melilot.<sup>1399</sup> Note that trefoil and clover are similar varieties and closely related from a scientific point of view. Moreover, according to some of the sources which describe the fruit as having horns, that plant may well be identified with Jerusalem trefoil (*Trigonella hierosolymitana*). The use of sweet clover for remedial purposes was known to classical physicians during the Hellenistic and Roman periods. Dioscorides describes the *Melilotos* plant and notes its uses: to relieve pains and to treat swellings, inflammations, and wounds in all parts of the body, mainly in the ears, eyes, testes, and anus. An extract from the leaves served as a diuretic and emmenagogue.<sup>1400</sup>

**PU:** Sweet clover features as one of the simples in an alphabetical list of preparations used for eye diseases (T-S NS 306.48r).

**TU:** Sweet clover is also mentioned in medical books, among the simples used to treat diseases afflicting the legs and nails, sciatica, varicose veins,

<sup>1393</sup> Goitein, Society, I, p. 154, IV, pp. 440–441; Gil, Kingdom, II, p. 888, no. 294, p. 979, no. 596; IV, p. 57, no. 621, p. 697, no. 837; Ben-Sasson, p. 627.

<sup>1394</sup> Maimonides, Glossaire, p. 18, no. 7; Issa, p. 166, no. 20.

<sup>1395</sup> Feinbrun-Dothan, p. 351; Zohary, p. 445.

<sup>1396</sup> E.g., Ben-Yakov, p. 445, who identifies 'iklil al-malik' with the species growing in Iraq called 'Crown imperial'; Dietrich, Egypt, pp. 47–49; Amar, Ibn al-Baytar, p. 60, especially n. 33.

<sup>1397</sup> E.g., Maimonides, Glossaire, p. 18, no. 7; Loewenfeld & Back, p. 179.

<sup>1398</sup> Issa, p. 116, no. 14.

<sup>1399</sup> Ibid., no. 20.

<sup>1400</sup> Dioscorides, III.48.

and venesection (T-S NS 306.172). An application used for inflammatory swellings (mainly in the breast) was composed of bean flour kneaded with egg white or melilot and mixed with sesame oil (T-S Ar.40.171). Melilot is found in a recipe citing Galen for skin lotions and poultices to heal pustules and remove scabs (T-S Ar.42.22), and melilot seeds are present in an aphrodisiac recipe also containing seeds of rue (T-S AS 176.405; T-S AS 176.400–4).<sup>1401</sup>

**OMU:** The physician Assaf in his entry ‘klilā de-malkā’ describes a plant with a good scent which was used to cure women’s wombs, snakebite, and those affected by various poisons. According to him, ‘ḥandakūkā’, identified with ‘melilotus’, was effective in treating the liver, lungs, heart, womb, snakebite and scorpion stings, to dissolve kidney stones, and to cure malaria. Elsewhere he describes this plant, noting that it is called ‘taltan’, and that it also serves to treat head wounds, swollen eyes, and earache.<sup>1402</sup> al-Kindī reports the use of the plant to treat the liver and stomach, and to reduce fever.<sup>1403</sup> Other physicians such as Ibn Sīnā, al-Bīrūnī, and al-Ghāfiqī note similar medicinal uses for different varieties of sweet clover.<sup>1404</sup> According to Maimonides, sweet clover was a hot and dry drug.<sup>1405</sup> He states that the method to cure swollen eyes was to soak a sponge in the water in which clover plants were cooked and to place it as a compress over the painful eyes.<sup>1406</sup> A similar use is set forth by Ḥunayn b. Iṣḥāq.<sup>1407</sup> In his entry ‘iklīl al-malik’ Maimonides comments that sweet clover is a medicinal plant and notes the existence of two varieties. The fruit of one type resembles a scorpion’s tail and is called ‘iklīl al-malik al-mu‘aqrab’. The roots of this plant were imported from Syria and used to prepare theriac<sup>1408</sup> to counteract the bites of venomous creatures.<sup>1409</sup> Elsewhere, Maimonides adds that “‘irq al-ḥiyya’ was the ‘root of the plant which surrounds Bayt al-Maqdis (Jerusalem) and they have testified to its value and confirmed its application.’ He supports his statement by explaining that he learnt of this matter from ‘those who

<sup>1401</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>1402</sup> Assaph, IV, 403, 405, 415.

<sup>1403</sup> al-Kindī, nos. 8, 36, 47, 59 and also p. 235.

<sup>1404</sup> E.g., Ibn Sīnā, p. 243; al-Bīrūnī, I, p. 41; II, p. 75; al-Ghāfiqī, no. 30.

<sup>1405</sup> Maimonides, Aphorisms, 21:69.

<sup>1406</sup> Ibid., 9:22.

<sup>1407</sup> Hunian, p. 181.

<sup>1408</sup> Theriac is the accepted term for a compound medication against poison, snakebite, and the bites of poisonous creatures.

<sup>1409</sup> In detail in Maimonides, Glossaire, p. 18, no. 7.



know plants and recognized that this medicine was from the root of the variety “makrona rial” called “al-mu‘aqrabi”.<sup>1410</sup> Ibn al-Bayṭār in his entry ‘iklīl al-malik’ cites classical and medieval physicians from whom one learns of the controversy as to the plant’s identity, although there was general agreement as to its uses. Ibn al-Bayṭār summarizes this debate and notes that this variety was widely used in Egypt and in the al-Shām region where it was grown, and that special use was made of the variety with the fruit resembling ox horns.<sup>1411</sup>

**TAI:** Sweet clover was among the simples and other materials bought in Cairo by one of the men of Makhluḥ ibn Ishāq at the beginning of the 11th century.<sup>1412</sup>

### Sweet marjoram

*Origanum majorana* = *Majorana hortensis* (Lamiaceae), **A:** **mardakūsh, marzanjūsh**<sup>1413</sup>

**D&H:** Small, perennial plant, with narrow, gray leaves and whitish-pink flowers which bloom from April to September. It originates in Europe and has been cultivated in the Levant for centuries.<sup>1414</sup> This plant is identified by few scholars as mentioned in the Bible in various contexts: in relation to the Passover in Egypt (Exodus 12:22), purification of the leper (Leviticus 14:4), the ashes of the red heifer (Numbers 19:6, 18),<sup>1415</sup> and its purgative qualities (Psalms 51:9).<sup>1416</sup> Dioscorides states that the plant is used as a cure for dropsy, oedema, inflammations, and excess urination, and to regulate menstruation.<sup>1417</sup> He also praises ‘marjoram oil’ which was brought from Egypt.<sup>1418</sup>

<sup>1410</sup> Maimonides, Poisons, p. 107, also n. 128.

<sup>1411</sup> Ibn al-Baytar, al-Jami, I, p. 50; Leclerc, no. 128. A detailed discussion is in Amar, Ibn al-Baytar, p. 60.

<sup>1412</sup> Gil, Kingdom, II, p. 676, no. 231; see also Dietrich, Egypt.

<sup>1413</sup> Issa, p. 130, no. 2, Maimonides, Glossaire, no. 236.

<sup>1414</sup> Plants & Animals, XII, pp. 90–91; Amar, Production, p. 40.

<sup>1415</sup> The Samaritans still use bunches of marjoram leaves to prevent blood clots and claim that ‘za’atar for the blood is like water for sugar’. Experiments conducted by the Hebrew University have not confirmed this theory. On this subject in detail see Crowfoot & Baldensperger, p. 78.

<sup>1416</sup> For detailed identification of the biblical hyssop (sweet marjoram) see Feliks, World, pp. 177–178; Fleisher, pp. 232–233.

<sup>1417</sup> Dioscorides, III.30.

<sup>1418</sup> Ibid., I.58.

**PU:** Sweet marjoram features in 3 lists of *materia medica* (T-S Ar.39.450; T-S AS 179.132; T-S AS 184.234); a dried plant is mentioned in a prescription (T-S Ar.43.338).

**TU:** Sweet marjoram is mentioned in medical books (T-S Ar.11.30; T-S Ar.41.47; T-S Ar.41.137; T-S Ar.42.167; T-S NS 90.71), on ophthalmology (T-S NS 222.18), on fevers (T-S NS 90.52; T-S NS 222.31), on *materia medica* (T-S Ar.40.152; T-S Ar.44.193; T-S AS 87.77; T-S AS 176.22), and in pharmacopoeias (T-S NS 222.27; T-S AS 170.183; T-S AS 181.271). It also is found in recipes (unknown uses; T-S Ar.41.81; T-S Ar.42.152), one for emmenagogues and abortifacients (T-S Ar.45.30), and is mentioned in a letter (T-S NS 327.93).<sup>1419</sup>

**OMU:** The physician Assaf asserts that marjoram is used to cure many illnesses, mainly gynaecological, kidney, and urinary tract disorders.<sup>1420</sup> Maimonides states that marjoram is an easily digested food<sup>1421</sup> and he cites al-Tamīmī asserting that it was used to treat anaemia.<sup>1422</sup> al-Qazwīnī writes in his entry 'sa'tar' (wild marjoram) that it is a remedy for toothache, intestinal worms, and snakebite.<sup>1423</sup> In his entry 'marzanjūsh' (sweet marjoram) al-Qazwīnī testifies to its good scent and says that it is used as a cure for migraines, headaches, constipation, and paralysis.<sup>1424</sup> Similar medicinal uses are described by Dāwud al-Anṭākī.<sup>1425</sup>

**TM:** Marjoram is used by the Arabs of Israel to relieve headache, to cure gum inflammations and to whiten and strengthen the teeth. It is also used to ease cough, strengthen the heart, cure dizziness, expel worms, and to treat internal inflammations of the stomach, lungs, and liver.<sup>1426</sup> Yemenite and Babylonian Jews made a medicinal tea from marjoram leaves to ease labour pains, as a general sedative, to cure heart pains, and reduce body swellings, mainly in the legs. Marjoram was also used as a component in remedies to ease headaches, earache, and stomachache, and to disinfect the female sex organs.<sup>1427</sup>

**TAI:** A merchant's letter sent from Jerusalem to Cairo, found in the Genizah (1065 CE), mentions a Jewish trader called Ibn 'Alūsh al-Jazzār

<sup>1419</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1420</sup> Assaph, IV.408.

<sup>1421</sup> Maimonides, Aphorisms, 20:49.

<sup>1422</sup> Ibid., no. 20:84.

<sup>1423</sup> al-Qazwīnī, p. 254.

<sup>1424</sup> Ibid., p. 262. Cf. Ibn Sina, p. 367.

<sup>1425</sup> al-Antaki, p. 292.

<sup>1426</sup> Palevitch et al., p. 21; Crowfoot & Baldensperger, p. 78.

<sup>1427</sup> Reiani, p. 30, no. 64; Ben-Yakov, pp. 77, 103, 116, 129 ff.

who journeyed from Tyre to Jerusalem and brought different substances including henna, 'sa'tar', and 'markadūsh'. This last name is a misspelling of 'mardakūsh' i.e. marjoram.<sup>1428</sup>

### Tamarisk

*Tamarix gallica*, *T. Orientalis* (Tamaricaceae), **A:** **thamar ṭarfā'**, **athl** [tree], **ṭarfā'**, **'azba**, **karmāzaj** [gallnuts]<sup>1429</sup>

**D&H:** Desert tree or shrub of Saharo-Arabian origin, grows on sand dunes and salty soils, with small rounded leaves, white to pink flowers, small pods that bear many tiny seeds.<sup>1430</sup> Various types of tamarisk and their parts were used widely in the medicine of ancient Babylonia.<sup>1431</sup> Dioscorides describes the tamarisk (*Myrike*) that grew in Egypt and that bore fruit similar to gallnuts. This fruit was a medication for diseases of the mouth and eyes, and served to treat blood-spitting, swellings, and the bites of poisonous creatures. It was also used to make a gargle and preparations against lice, and to make dressings. The leaves were a component in a medication to relieve toothache and diseases of the spleen. *Akakalis* was the name of the tamarisk fruit that grew in Egypt and served to improve the eyesight.<sup>1432</sup>

**PU:** Tamarisk features in 4 prescriptions for unknown uses (T-S Ar.30.305; T-S Ar.39.274; T-S Ar.39.211; T-S Ar.39.451).

**TU:** Tamarisk is also mentioned in medical books (T-S Ar.44.91; T-S Ar.44.130; T-S Ar.44.209), on *materia medica* (T-S Ar.39.369; T-S Ar.44.204; T-S Or.1080.4.24), in pharmacopoeias (T-S NS 164.152; T-S NS 222.69; [recipe for apparent swelling behind the ears] T-S AS 176.493), and in recipes for emmenagogues and abortifacients (T-S Ar.45.30), and unknown uses (bearing the name of Abū 'Alī; T-S Ar.39.211r).<sup>1433</sup>

**OMU:** The physician Assaf mentions tamarisk, which was used to treat the spleen, the thigh tendon, and the stomach.<sup>1434</sup> al-Kindī describes the use gallnuts of tamarisk, *Tamarix gallica*, as components in a prepara-

<sup>1428</sup> Goitein, Jewry, p. 204; Gil, Kingdom, II, p. 676, no. 503.

<sup>1429</sup> Issa, p. 177, nos. 3, 6; Serapion, p. 493; Mainmonides, Glossaire, nos. 9, 200; Crowfoot & Baldensperger, p. 113. Compare Dinsmore & Dalman, nos. 307–312.

<sup>1430</sup> Plants & Animals, X, pp. 235–237.

<sup>1431</sup> al-Kindī, p. 250, no. 57.

<sup>1432</sup> Dioscorides, I.116, 118.

<sup>1433</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1434</sup> Assaph, IV, 420.

tion to polish and clean the teeth, to treat caries, and to improve mouth odour.<sup>1435</sup> These gallnuts were also used to treat earache and gum pains, and to cure various wounds.<sup>1436</sup> Maimonides reports that the fruit was a component in a medication to treat a spider's bite. It was hot and dry drug.<sup>1437</sup> Similar and other medical uses are described by al-Ghāfiqī and Ibn al-Bayṭār.<sup>1438</sup>

**TM:** The various parts of tamarisk are used as medicine among the Arabs of Israel. The bark is used as a medication for eye infections and as a component in various eye ointments; the seeds are used for toothache; the leaves and stems have a similar use and they also served to soothe stomach-ache; the root is used as a component in medications for joint pains, cold, and blockages, and it also contributes to curing open wounds and eczema.<sup>1439</sup> The Bedouins in Sinai and the Negev use various types of tamarisk, mainly the river tamarisk, to treat, among other things, bodily pains, eye infections, vomiting, snakebite and joint pains.<sup>1440</sup> The gallnuts of the tamarisk are used in Egypt till today to treat haemorrhages, dysentery, and diseases of the eyes.

**TAI:** Ibn al-Bayṭār notes that according to Dioscorides the tamarisk grew in Egypt and in the al-Shām region.<sup>1441</sup> Tamarisk seeds (probably gallnuts) were mentioned as sold in general shops.<sup>1442</sup>

## Tar

### A: qitrān

**D&H:** Black liquid, similar to pitch, produced from wood of cedar, pine, and cypress trees.<sup>1443</sup> It was used for various purposes, including curing humans and animals (mainly for skin diseases), long before the flowering of Islamic medicine.<sup>1444</sup> al-Bīrūnī describes the production of resin from various species of pine and cedar that grew in Syria (on the

<sup>1435</sup> al-Kindi, no. 106. Cf. Ibn Sina, p. 327.

<sup>1436</sup> al-Kindi, nos. 23, 69, 72, 77, 89, 91, 102.

<sup>1437</sup> Maimonides, Poisons, p. 122; Maimonides, Aphorisms, 9:88; 21:69.

<sup>1438</sup> al-Ghāfiqī, no. 6; Ibn al-Bayṭār, al-Jami, I, pp. 11–12; Leclerc, no. 17.

<sup>1439</sup> Palevitch et al., p. 42. See also other uses throughout the world on pp. 43–44. For uses in Europe, see Grieve, pp. 68–69.

<sup>1440</sup> Levey, Beduins, p. 77.

<sup>1441</sup> Ibn al-Bayṭār, al-Jami, III, pp. 98–99; Leclerc, no. 1455. Cf. al-Antaki, p. 231.

<sup>1442</sup> Gil, Kingdom, III, p. 756, no. 525.

<sup>1443</sup> See also entry Cedar for the uses of cedar oil.

<sup>1444</sup> Ullman, Medicine, p. 217.

mountains of Lebanon). The resins served medical purposes and a high dosage was considered toxic.<sup>1445</sup>

**PU:** Tar features in 2 prescriptions for unknown uses (ointment; T-S AS 169.297r; T-S Ar.39.451).

**TU:** Tar is also mentioned in medical books dealing with ophthalmology (T-S Ar.41.24) and dentistry (T-S Ar.42.39; T-S Ar.43.306), in other fragments (T-S Ar.43.145; T-S NS 297.88; T-S Or.1080.13.33) and in recipes for emmenagogues and abortifacients (T-S Ar.45.30).<sup>1446</sup>

**OMU:** al-Kindī describes the use of the cedar tar to treat infections and earache and toothache, and also to treat poisons and insanity.<sup>1447</sup> A similar substance was used, according to him, to treat swellings of the lip, haemorrhoids, and mumps.<sup>1448</sup> According to Maimonides, the cedar tar was the main component in an enema, and it also served as a diuretic, as a medicine to open obstructions in the urinary tract, and a component in a dressing for bites and stings. The drug was considered hot and dry and was recommended for external use only. ‘The sediment of dry ‘iṭrān’ was a component in an aphrodisiac medication that ‘stiffened the male sexual organ and prevented it from drooping quickly’.<sup>1449</sup> Dāwud al-Anṭākī describes the process of production and notes that this was a hot and dry drug that served as immunity against insects, and cured chills, chest pains, cough, and earache. It was also used to for abortions and to cure diseases of the skin and eyes.<sup>1450</sup>

**TM:** Yemenite Jews made use of the resin of pine trees, which was extracted from the bark, to cure wounds, to reduce fever of the wounds, and as a component in a medication against tuberculosis and lesions in the lungs. Among the Jews of Iraq it served as a component in ointments to treat skin diseases such as scurvy, as a component in a medication to stop the menstrual cycle, and one of the components in a dressing for swellings.<sup>1451</sup> In Egypt ‘iṭrān’ was taken internally in the 20th century to treat chest problems, and externally as a component in various

<sup>1445</sup> al-Biruni, I, pp. 270–271; II, p. 102.

<sup>1446</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

<sup>1447</sup> al-Kindi, nos. 105, 119, 202, 205.

<sup>1448</sup> *Ibid.*, nos. 76, 121.

<sup>1449</sup> Maimonides, Aphorisms, 13:35; 21: 65, 89; Maimonides, Poisons, p. 102; Maimonides, Sexual, 12:1.

<sup>1450</sup> al-Antaki, p. 261.

<sup>1451</sup> Ben-Yakov, pp. 108, 30, 233.

ointments.<sup>1452</sup> In Israel it is used to treat skin diseases.<sup>1453</sup> Ethereal oils derived from the cedar were components in cleaning materials, soaps, cosmetic products, and preparations to repel insects.<sup>1454</sup>

**TAI:** Tar was exported from Lebanon and probably also from North Africa to Cairo through Alexandria.<sup>1455</sup>

## Thyme

Germander, wood sage, *Teucrium capitatum* (Lamiaceae), **A:** ja'da, kamādriyūs<sup>1456</sup>

**D&H:** The genus contains 300 species that grow throughout the world. Its scientific name apparently derives from the name of a king of Troy, who was the first to use it for curative purposes. The name of the genus in Hebrew derives from the Arabic name, which describes the curly leaves. Dioscorides describes *Polion* and lists medical uses such as curing wounds, snakebites, and scorpion stings, and stimulating menstruation.<sup>1457</sup>

**PU:** Thyme features in 2 lists of *materia medica* (T-S Ar.39.487; T-S AS 184.234).

**TU:** Thyme is also mentioned also in medical books (T-S Ar.11.31; T-S Ar.40.104), on *materia medica* (T-S Ar.44.204), in pharmacopoeias (T-S Ar.42.68; T-S NS 222.25), in recipes for stomach ailments, colic, excessive lachrymation, eyelids growth, tonic (T-S Ar.43.320; T-S Ar.45.28; T-S NS 90.28), in lists of *materia medica* (T-S AS 150.136; T-S AS 184.234), and in other fragments (T-S NS 297.115).<sup>1458</sup>

**OMU:** Ibn Sinā recommends the use of thyme for the treatment of fresh wounds, abscesses, spleen swellings, chronic fevers, and scorpion stings, and as a diuretic, a purgative and menstrual stimulant.<sup>1459</sup> Maimonides states that the plant is a hot and dry drug, frequently used for medical purposes.<sup>1460</sup> al-Ghāfiqī cites the classical physicians reporting that it is a diuretic, stimulates menstruation, and cures wounds, ulcers, bruises,

<sup>1452</sup> Ducros, p. 108, no. 190.

<sup>1453</sup> Lev & Amar, Ethnic, p. 296.

<sup>1454</sup> Hill, p. 190.

<sup>1455</sup> Gil, Kingdom, II, p. 607, no. 207.

<sup>1456</sup> Dinsmore & Dalman, no. 1429; Issa, p. 179; Maimonides, Glossaire, no. 72.

<sup>1457</sup> Dioscorides, III.124.

<sup>1458</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1459</sup> Ibn Sina, I, p. 285.

<sup>1460</sup> Maimonides, Aphorisms, 21:75.

and stings of poisonous insects. It also serves to treat dropsy, jaundice, and problems of the spleen.<sup>1461</sup> According to Dāwud al-Anṭākī the plant serves to treat side effects of inebriating drugs, snakebite, scorpion stings, stones and obstructions in the urinary tract, jaundice, swellings, and flatulence, as well as to cleanse the womb, to eliminate intestinal worms, and to treat wounds.<sup>1462</sup>

**TM:** The following medical uses were applied by the Arabs of Israel: to relieve weakness during menstruation, to ease morning sickness at the beginning of pregnancy, to enhance the appetite, to quiet infants, to soothe stomach-ache, to cure infections in the kidneys and in the sexual organs, to assist in diabetes, and to treat open wounds.<sup>1463</sup> The Bedouin in Sinai and the Negev use the plant to cure colds and to relieve stomachaches, dysentery, vomiting, shortness of breath, cough, phlegm, and chills.<sup>1464</sup> In Iraq and Iran thyme and other species serve to relieve labour pains, to cure infections of the intestines, and to reduce fever. Various species of thyme are considered a drug for arousal, stimulus, constriction, a disinfectant, a diuretic, and to eliminate worms.<sup>1465</sup> Yeminite Jews used the plant to treat scorpion stings and to strengthen the eyesight and memory.<sup>1466</sup>

**TAI:** al-Kūhīn al-‘Aṭṭār al-Isrā’īlī (13th century) reports on the properties of the species that originated in the al-Shām region.<sup>1467</sup>

## Wallflower

*Erysimum cheiri* (= *Cheiranthus chiri*) (Brassicaceae), **A: khayrī**<sup>1468</sup>

**D&H:** The wallflower is a perennial plant that grows in southern Europe. The plant has individual yellow flowers, and from earlier times, through the Middle Ages to the present, it has served to produce perfume.<sup>1469</sup> The

<sup>1461</sup> al-Ghāfiqī, no. 208. Cf. Ibn Sina, p. 285; al-Biruni, II, p. 85.

<sup>1462</sup> al-Antaki, p. 106. Cf. Ibn al-Baytar, al-Jami, I, p. 163; Leclerc, no. 488.

<sup>1463</sup> Palevitch et al., p. 51.

<sup>1464</sup> Levey, Beduins, p. 78. Compare Osborn, p. 169.

<sup>1465</sup> Hooper, pp. 177–178; al-Rawi & Chaakravarty, p. 92, with contents of active substances.

<sup>1466</sup> Reiani, no. 115.

<sup>1467</sup> Kohen, al-Attar, p. 217.

<sup>1468</sup> Maimonides, Glossaire, no. 394; Dinsmore & Dalman, no. 72; Issa, p. 46, no. 20; al-Badri, p. 81; Ibn al-Baytar, al-Jami, IV, p. 167; Leclerc, no. 2181. Cf. al-Antaki, p. 149.

<sup>1469</sup> Grieve, p. 842; Zohary, Culture, p. 75.

wallflower is mentioned in classical literature as a well-known perfume plant. Dioscorides in his entry *Leukoion* describes the plant of golden flowers used for incense and for medical uses such as treating infections, accelerating menstruation, aborting fetuses, and curing the spleen.<sup>1470</sup>

**PU:** Oil of wallflower is found in a prescription (T-S NS 194.70).

**TU:** Wallflower is also mentioned in medical books on with regimen for health (T-S Ar.40.68), on poisons (T-S Ar.44.77), and in pharmacopoeias (T-S Ar.43.88; T-S NS 222.61).<sup>1471</sup>

**OMU:** Ibn Māsawayh writes in his treatise that the oil is recommended for use in the bathhouse in November.<sup>1472</sup> Maimonides states that the plant is a component in a medication to improve virility. It is included among the hot and dry drugs, and is extensively used.<sup>1473</sup> Ibn al-Bayṭār notes that the plant was known to classical physicians (Galen and Dioscorides), and he cites al-Ghāfiqī describing the use of the plant to cure rotten teeth.<sup>1474</sup> al-Qazwīnī describes three species and lists their main uses: to cure head colds, to eliminate bad odours, to accelerate menstruation, and to expel the placenta.<sup>1475</sup>

**TM:** In Iraq, the plant and especially the flower and seeds are used to accelerate menstruation and energize heart activity. Wallflower also serves as a stimulating drug and as a poison.<sup>1476</sup> In Europe and England the plant was used to produce perfumed oil that had an effect on the nerves and muscles. It also served to accelerate menstruation, to stop spasms, and to cause diarrhoea.<sup>1477</sup>

**TAI:** During the Mamluk period the plant was listed among the perfume plants in the al-Shām region.<sup>1478</sup>

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<sup>1470</sup> Dioscorides, III.138.

<sup>1471</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1472</sup> Ibn Masawayh, p. 244.

<sup>1473</sup> Maimonides, Sexual, no. 8; Maimonides, Aphorisms, 21:75, 80.

<sup>1474</sup> Ibn al-Baytar, al-Jami, II, p. 82; Leclerc no. 837. Compare al-Biruni, p. 141.

<sup>1475</sup> al-Qazwīnī, p. 249.

<sup>1476</sup> al-Rawi & Chaakravarty, p. 25, with content of active substances.

<sup>1477</sup> Uphof, p. 123, with content of active substances.

<sup>1478</sup> al-'Umari (Sayyid ed.), p. 26.



## Wheat

*Triticum sp.* (Poaceae), **A: ḥiṭṭa, burr, ḥabba, qamḥ** (flour)<sup>1479</sup>

**D&H:** Annual cultivated weed with tall stalks (1.5 m), two-rows spikes that bear edible seeds (grains).<sup>1480</sup> Wheat is listed among the first plants cultivated by farmers in the Middle East from the wild wheat plant (*Triticum dicoccoides*); since then has become one of the fundamental agricultural crops in the world.<sup>1481</sup> Wheat is included among the basic crops of the Land of Israel throughout recorded history. In the Bible it is the first among the seven species (Deuteronomy 8:8), and it is mentioned in many places in rabbinical literature. Many sources from the Byzantine period and the Middle Ages describe the wheat growing all over the Land of Israel. Other sources reflect the trade in it, the methods of processing it for food, and its consumption by inhabitants.<sup>1482</sup>

**PU:** Wheat seeds feature in 2 prescriptions (T-S Ar.43.338), in another for the treatment of face and eye (T-S Ar.35.363), and in a list of *materia medica* (T-S Ar.39.450).

**TU:** Wheat is also mentioned in medical books (T-S Ar.39.311; T-S Ar.41.133; T-S Ar.41.137; T-S Ar.43.98; T-S Ar.44.86; T-S Ar.44.130; T-S NS 90.71; T-S NS 305.3; T-S AS 179.221), on ophthalmology (T-S Ar.43.76), on dermatology (T-S NS 90.66), on poisons (T-S Ar.41.116), of *materia medica* (T-S Ar.40.49 [acute inflammatory swellings]; T-S Ar.41.133; T-S Ar.42.115; T-S Or.1080.2.74), in pharmacopoeias (T-S Ar.41.96; T-S Ar.43.270; T-S Ar.45.31; T-S Ar.45.33; T-S NS 34.16 T-S NS 90.27; T-S NS 222.21; T-S NS 222.59), and in quasi-medicine (T-S Ar.44.206; T-S AS 176.327; T-S AS 183.271). It also appears in recipes for skin, mouth, and throat diseases, for fever (T-S NS 327.90; T-S AS 183.183), and for unknown uses (T-S Ar.42.46; T-S AS 184.175), and in other fragments (T-S Ar.41.112; T-S NS 90.26; T-S NS 297.206; T-S Or.1080.14.47).<sup>1483</sup>

**OMU:** According to Maimonides the wheat grains are a hot drug and equally dry and moist.<sup>1484</sup> Dāwud al-Anṭākī lists various kinds of wheat

<sup>1479</sup> Plants & Animals, XII, pp. 15–19; Zohary, pp. 627–628.

<sup>1480</sup> Ibid.

<sup>1481</sup> During the Middle Ages a few species of wheat were cultivated in this region, including hard wheat (*Triticum durum*), on which see Watson, Innovation, pp. 20–23.

<sup>1482</sup> In detail: Amar, Production, pp. 150–163.

<sup>1483</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1484</sup> Maimonides, Aphorisms, 21. Additional uses in al-Biruni, I, p. 132, no. 71.

and describes their uses and qualities. The main medical uses he enumerates are curing skin diseases and putrescent wounds, improving the facial skin, intimate medical cleansing for women, and relieving pains of the chest and kidneys.<sup>1485</sup>

**TM:** Yemenite Jews cooked the grains of hard wheat and used them against joint infections.<sup>1486</sup> The Jews of Iraq used wheat grains to improve the memory, to treat cough, and to open obstructions in the urinary tract.<sup>1487</sup> Rabbi Rafael Ohana notes that boiled wheat served to cure coughs and blood haemorrhages, to prepare compresses to ease pains, to cleanse the facial skin, to soften hardened breasts, and to treat snakebite.<sup>1488</sup>

**TAI:** Wheat was largely cultivated in the Levant and exported into Egypt as a staple food.<sup>1489</sup>

## White-behen

*Centaurea behen* (Asteraceae), **A:** **bahamān abyad**<sup>1490</sup>

**D&H:** Tall spiny plant (1–1.5 m) that grows in rocky habitats in the eastern Mediterranean and western Irano-Turanian region.

**PU:** White-behen, as well as red-behen, feature in a prescription (T-S Ar.43.338).

**TU:** White-behen is mentioned also in medical books (T-S Ar.41.66; T-S Ar.43.98), on palpitation (T-S Ar.44.149), on *materia medica* (T-S Ar.44.204), in pharmacopeias (T-S Ar.41.90; T-S Ar.41.114), in recipes for palpitation, theriac, and a purgative (T-S Ar.42.199), and other fragment (T-S NS 297.56).<sup>1491</sup>

**OMU:** Maimonides describes the medical qualities of the plant as hot and dry.<sup>1492</sup> R. Nathan ben Yoel Falaquera recommends the use of the plant to treat heart ailments, to increase weight, and to improve sperm

<sup>1485</sup> al-Antaki, pp. 133–134. Cf. Ibn al-Baytar, al-Jami, II, pp. 38–39; Leclerc, no. 715.

<sup>1486</sup> Reiani, no. 119.

<sup>1487</sup> Ben-Yakov, pp. 147, 317, 326.

<sup>1488</sup> Ohana, p. 213.

<sup>1489</sup> Goitein, Society, I, pp. 118–119, IV, pp. 234–244, VI, p. 121. See vast number of documents on wheat and its products in the index; Gil, I, pp. 185–186; Gil, Kingdom, IV, p. 943; see more than 90 documents on wheat in the index.

<sup>1490</sup> Issa, p. 44, no. 13, Maimonides, Glossaire, no. 50.

<sup>1491</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1492</sup> Maimonides, Aphorisms, 21:77.

quality.<sup>1493</sup> al-Ghāfiqī cites earlier physicians on the medical uses of the two kinds of behen, mainly to fortify the heart, to fatten, against gout, and as an aphrodisiac.<sup>1494</sup>

**TM:** The root of the plant is recorded as on sale in Cairo markets and as used as tonic.<sup>1495</sup>

### Wild nard

Asarun, asarabacca, cabaret, *Asarum europaeum* (Aristolochiaceae),  
**A:** **asārūn**<sup>1496</sup>

**D&H:** Herbaceous perennial with a kidney shaped leathery evergreen leaves. The flowers are bell shaped. The rhizome is slender, 2 mm thick. The plant grows wild in woods in Europe and north-west Asia, and is cultivated as a garden plant today in England.<sup>1497</sup> Dioscorides states that the root is good against convulsions and dysmenorrhea, and the leaves effective for erysipelas. The roots were also considered a diuretic, good for warming, and to cause vomiting.<sup>1498</sup>

**PU:** Wild nard features in 3 prescriptions, twice in one called ‘ma‘jūn hibat Allāh’ (T-S Ar.34.305), in another for unknown uses (T-S NS 297.17), and in one for cough (T-S K25.116).

**TU:** Wild nard is also mentioned in medical books (T-S Ar.11.31; T-S Ar.43.98; T-S Ar.43.265), on fever (T-S NS 306.74), on *materia medica* (T-S Ar.40.157; T-S Ar.43.191), in one as useful for headaches and diseases of the brain (T-S Ar.40.157), in pharmacopoeias (T-S Ar.40.91; T-S Ar.41.114; T-S NS 222.25; T-S NS 222.43; T-S NS 222.59), and in quasi-medicine (T-S Ar.41.115). It also appears in recipes for cough, colds, theriac, palpitation, stomach ailments, colic, purgative, and general tonic (T-S Ar.11.11; T-S Ar.42.199; T-S Ar.43.320; T-S Ar.45.28), in a lexicon of *materia medica* (T-S AS 160.197), and in other fragments (T-S Ar.39.472).<sup>1499</sup>

**OMU:** al-Kindī employed wild nard to treat of fevers, jaundice, thirst, stomach-ache and liver pain, to strengthen breathing, and to correct

<sup>1493</sup> Amar & Buchman, p. 163.

<sup>1494</sup> al-Ghāfiqī, p. 297, no. 139.

<sup>1495</sup> Ducros, pp. 26–27, no. 47.

<sup>1496</sup> Issa, p. 23, no. 15; Maimonides, Glossaire, no. 21.

<sup>1497</sup> Wren, p. 18.

<sup>1498</sup> Dioscorides, I.9.

<sup>1499</sup> Isaacs & Baker, personal observations and Isaacs’ unpublished notes.

skin complexion.<sup>1500</sup> Ibn Sīnā used it for anasarca sciatica, lumbago, liver, jaundice, and scars on the cornea.<sup>1501</sup> R. Nathan ben Yoel Falaquera records the uses of wild nard for the treatment of internal organs (liver, spleen) and jaundice, and to ease pain and improve the sperm.<sup>1502</sup>

**TM:** Wild nard is used in traditional Arabic medicine (Iraq, Iran, and Egypt) used as an emetic substances, a diaphoretic, a diuretic, a purgative, a soporific, vomitive, and for rheumatism and eye diseases.<sup>1503</sup>

**TAI:** Wild nard is mentioned in an 11th-century merchant's list in Cairo (T-S J.1.1) and in a letter sent from Mahdiyya to Cairo (Bodl. MS Heb a 3,f.13) about substances bought in Egypt.<sup>1504</sup>

## Wild rue

Harmal, *Peganum harmala* (Zygophyllaceae), **A:** **ḥarmal**<sup>1505</sup>

**D&H:** Perennial shrub, low (30–50 cm), flowers white or yellow, bearing multi-seed fruit. Grows wild in deserts and mountains in Arabia, Iran, Syria, North Africa, and southern Europe.<sup>1506</sup> Dioscorides describes the plant as a shrub, more tender than rue, extremely bitter, and used for dullness of the sight.<sup>1507</sup>

**PU:** Wild rue features in 2 lists of *materia medica* (T-S Ar.39.450; T-S Ar.39.487) and in a prescription (T-S Ar.41.81).

**TU:** Wild rue is also mentioned in medical books (T-S Ar.11.18; T-S Ar.40.5; T-S NS 306.4), on *materia medica* (T-S Ar.43.191; T-S Ar.44.204), in pharmacopoeias (T-S NS 222.67; T-S NS 305.107; T-S AS 176.400) and in quasi-medical fragments (T-S NS 306.198).<sup>1508</sup>

**OMU:** In medieval Arab medicine the plant was considered an emetic, an aphrodisiac, and a diuretic, and was used to treat intestinal diseases, haemorrhoids, and diseases of nerves.<sup>1509</sup> al-Kindī put wild rue in prescriptions to treat insanity, epilepsy, haemorrhoids, and baldness.<sup>1510</sup>

<sup>1500</sup> al-Kindi, p. 227, no. 4.

<sup>1501</sup> Ibn Sina, I, p. 248.

<sup>1502</sup> Amar & Buchman, p. 154.

<sup>1503</sup> Hooper, p. 88; Ducros, p. 3, no. 5.

<sup>1504</sup> Gil Kingdom, II, p. 842, no. 282, III, p. 938, no. 581.

<sup>1505</sup> Issa, p. 136, no. 24; Maimonides, Glossaire, no. 160.

<sup>1506</sup> Lev and Amar, Ethnic, p. 224.

<sup>1507</sup> Dioscorides, III.52.

<sup>1508</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

<sup>1509</sup> Lev and Amar, Ethnic, p. 224.

<sup>1510</sup> al-Kindi, p. 258, no. 75.

R. Nathan ben Yoel Falaquera records the uses of wild rue for colic, sciatica, and arthritis, and as a diuretic.<sup>1511</sup>

**TM:** In Iran and Iraq the seeds are used in traditional medicine as an alterative and purifying medicine, and as aphrodisiac.<sup>1512</sup> In modern Egypt it serves as an emmenagogue, a diuretic, and a vomitive.<sup>1513</sup> In Israel the seeds are used to treat high blood sugar content, heart diseases, and stomach-ache, and to strengthen the body.<sup>1514</sup>

## Willow

*Salix* sp. (Salicaceae), **A:** *S. aegyptiaca*—**khilāf**,<sup>1515</sup> *S. Babylonia*—**'aṭā**,<sup>1516</sup> *S. sp.* **ṣafṣāf**<sup>1517</sup>

**D&H:** There are widespread species of willow in the Levant, especially white willow (*Salix alba*), mainly on the banks of streams.<sup>1518</sup> 'Weeping willow' is listed among the four species assembled for ritual purposes on the Succoth festival (Leviticus 23:40). The Bible refers to the tree in its habitat along the banks of streams (e.g., Isaiah 44:4) and in place-names (for example: Joshua 15:6).<sup>1519</sup> Dioscorides describes *Itea* and the curative properties of its leaves, its bark, and its fruit in cases of pain, wounds, and various diseases.<sup>1520</sup>

**PU:** Willow is mentioned in a prescription for unknown uses (T-S AS 151.56v).

**TU:** Willow also appears in medical books (T-S Ar.39.297), on ophthalmology, namely inversion of the eyelids (collyrium made of salix; T-S AS 184.363), in recipes for fever, colic, and stomachache (T-S NS 90.47), in lexica of *materia medica* (T-S Or.1081.1.21), and in pharmacopoeias (treating damaged hair; T-S NS 222.28v).<sup>1521</sup>

<sup>1511</sup> Amar & Buchman, p. 188.

<sup>1512</sup> Hooper, p. 148.

<sup>1513</sup> Ducros, p. 12, no. 22, p. 38, no. 67.

<sup>1514</sup> Lev & Amar, Ethnic, p. 224.

<sup>1515</sup> Issa, p. 160, no. 5 [Egyptian willow].

<sup>1516</sup> Issa, p. 160, no. 8 [weeping willow].

<sup>1517</sup> Issa, p. 160, no. 5; Maimonides, Glossaire, nos. 199, 393; Dinsmore & Dalman, no. 1957 see also Issa, p. 146, no. 18 [*Populus euphratica*—white poplar].

<sup>1518</sup> Plants & Animals, X, p. 23.

<sup>1519</sup> Additional biblical and rabbinical sources are given in Feliks, World, pp. 113–114.

<sup>1520</sup> Dioscorides, I.136.

<sup>1521</sup> Isaacs & Baker, personal observations and Isaacs' unpublished notes.

**OMU:** According to Maimonides, willow is a cold and dry drug.<sup>1522</sup> The tree's resin served as a component in a concoction to quench sexual desire.<sup>1523</sup> al-Ghazzī relates that willows grow on the banks of streams and are known in Syria. The wood is used for industrial purposes and some of the species are used, mainly the juice of the leaves, for curing diseases of the skin and eyes, as well as wounds.<sup>1524</sup>

**TM:** The wood is used for carpentry and for building boats, while the branches and the bark are used to weave baskets.<sup>1525</sup> White willow serves in Iraq as a stimulating drug, an energizer, and a disinfectant, to delay menstruation, and is assigned to the treatment of malaria and joint diseases. The species *Salix purpurea* is used for similar purposes, while *Salix fragilis* secretes a sugary liquid resembling manna, used mainly to cure skin and sexual diseases.<sup>1526</sup> The bark and the leaves of white willow contain glycoside closely allied to aspirin that serves to reduce fever, to relieve pains, and cure infections.<sup>1527</sup>

## Yew

*Taxus baccata* (Taxaceae),<sup>1528</sup> **A: zarnab**<sup>1529</sup>

**D&H:** Slow growing evergreen tree (25 m), with rust-red bark and flattened, dark-green needle-like leaves. The female trees produce fleshy red cup-like fruits.<sup>1530</sup> In the period before the spread of Christianity in the British Isles, the yew was considered there a holy tree.<sup>1531</sup> Dioscorides describes *Smilax*, called *Taxus* in Latin, and identifies it with a species of oak used as a medicinal plant.<sup>1532</sup>

<sup>1522</sup> Maimonides, Aphorisms, 21:73. Cf. Ibn Sina, p. 416; al-Biruni, I, 206.

<sup>1523</sup> Maimonides, Sexual, 5:5. Additional uses in al-Antaki, p. 142; al-Biruni, II, 91–92.

<sup>1524</sup> Hamarneh, Plants, p. 247.

<sup>1525</sup> Plants & Animals, XII, p. 23. On the use of various species of willow in the world see Uphof, p. 465.

<sup>1526</sup> Hooper, p. 168; al-Rawi & Chaakravarty, p. 85, with contents of active substances. Compare Grieve, p. 847.

<sup>1527</sup> Plants & Animals, X, p. 23; XII, p. 86; Palevitch, Plants, p. 266.

<sup>1528</sup> Zohary, pp. 226–227; Grieve, p. 866; Bown, p. 210.

<sup>1529</sup> Maimonides, Glossaire, no. 137; Issa, p. 187, no. 4; Hooper, pp. 176–177; Ghaleb, p. 487, no. 10012.

<sup>1530</sup> Chevallier, p. 273.

<sup>1531</sup> Grieve, p. 866.

<sup>1532</sup> Dioscorides, IV.80.

**PU:** Yew features in a list of *materia medica* (T-S Ar.35.252) and in a prescription (T-S Ar.43.338).

**TU:** Not found yet.

**OMU:** al-Kindī describes the use of the yew in a preparation to treat heart problems and depression.<sup>1533</sup> Ibn Māsawayh also describes the use of the plant and distinguishes several species, the preferred one being that which had the smell of lemons; this was used mainly as an aromatic preparation for women.<sup>1534</sup> According to Maimonides the plant yielded hot and dry drugs that were used extensively.<sup>1535</sup> Dāwud al-Anṭākī states that the yew retained its medical properties for four years. Among its main medical uses were: dispelling bad smells, disinfecting, softening the voice, dissolving phlegm, and improving digestion and disposition. The yew also served as a diuretic and a component in preparations against poisons.<sup>1536</sup>

**TM:** In Iraq and Iran, a mixture of aromatic substances composed mainly of the leaves, branches, cones, and the bark of trees with needle-pointed leaves, especially the yew, was considered a drug against spasms and was also used to treat asthma.<sup>1537</sup> The fruit and its seeds are poisonous. The seed contains an alkaloid taxine and the substance milossin.<sup>1538</sup>

**TAI:** According to Ibn Waḥshiyya, the tree was widespread between the al-Shām region and the wilderness of Paran, that is, in and around the al-Shām region. The pungent scent of the tree and its beneficial value came from its leaves.<sup>1539</sup> Dāwud al-Anṭākī cites Ibn ‘Imrān stating that the tree grew in Lebanon. According to him, it had yellow flowers, while those that grew in the mountains of Persia were more pungent and better than those growing in the al-Shām region.<sup>1540</sup>

<sup>1533</sup> al-Kindi, nos. 3, 213.

<sup>1534</sup> Levey, Ibn Masawayh, p. 405. On the identification see note 70.

<sup>1535</sup> Maimonides, Aphorisms, 21:75, 85.

<sup>1536</sup> al-Antaki, p. 177. Cf. Ibn al-Baytar, al-Jami, II, pp. 158–159; Leclerc, no. 1098.

<sup>1537</sup> Hooper, pp. 176–177.

<sup>1538</sup> Grieve, p. 866.

<sup>1539</sup> Ibn Waḥshiyya, II, 1247.

<sup>1540</sup> al-Antaki, p. 177.

## CHAPTER EIGHT

### EPILOGUE

Writing this book has been an extraordinary experience. The daily work with the prescriptions, the letters and the lists of *materia medica* enabled us to get closer to the medical practitioners among the Genizah people. It was also a golden opportunity to learn first-hand about the daily life and world of the medieval community located in a Muslim centre as they actually were. This is in contrast to what has at times happened in other historical research projects conducted by means of contemporary literary sources (books), which in some cases suffer from tendentiousness, as well as offering a selective description of the medieval reality.

We spent hundreds of hours deciphering the Genizah health practitioners' handwriting, scrutinizing their prescriptions, studying their medical doctrines, and understanding their ways of thinking and acting in medicine, pharmacology, trade, and related fields. These were crucial steps in the long process of reconstructing and understanding the inventory of practical and theoretical *materia medica*, for example, grasping how the Genizah people exploited the natural resources all over the medieval world with the aim of improving their medical condition.

We would like to share with readers some final conclusions and insights on the use of medicinal substances by the Genizah people and their neighbours.

- A. This unique and substantial collection of prescriptions and lists of *materia medica*, along with the hundreds of fragments of medical and pharmacological books, allowed us, for the first time, to reconstruct both the inventory of practical *materia medica* (278 substances) of one minority community of the medieval Mediterranean. The great majority of the substances, 223 in number (80.2%), are of plant origin, 31 (11.2%) are of inorganic origin, and 24 (8.6%) are of animal origin. The theoretical inventory of *materia medica* has 414 substances, of which 310 (74.8%) are of plant origin, 69 (16.7%) are of inorganic origin, and 35 (8.5%) are of animal origin.
- B. By reconstructing these inventories we were able to assess the gap in numbers between them (136 substances) and even isolate and



identify what these substances are and analyze them: 87 (64%) of plant origin, 38 of animal origin (27.9%), and 11 (8.1%) of inorganic origin. In all, the gap consists of more than one third (33.8%) of the total number of substances mentioned in books, prescriptions, and lists of *materia medica*.

- C. After studying the prescriptions and the lists of *materia medica*, we were also able to ascertain, focus on, analyze, and set out in our book the most frequently used substances (20). These, except for salt and honey, are of plant origin. A few substances might have been of local origin (gum arabic and sugar); others were brought from the Levant (almonds, rose, endive). Many others had to be imported into Egypt from south-east Asia (pepper, myrobalan, camphor, spikenard) and others from the western Mediterranean (saffron, lentisk).
- D. The unique opportunity to trace the frequency of substance use led us, for example, to the one most mentioned in the Genizah medical documents: myrobalan (*Terminalia sp.*). This came as a surprise, considering that myrobalan, the fruit of several *Terminalia* species, is not mentioned by classical physicians or pharmacologists. *Terminalia* assumed its place only as a consequence of the Muslim conquests, namely several generations after the 7th century.
- E. From studying the prescriptions we could also learn about the most prevalent ailments from which the community's members suffered: eye diseases, headache, constipation (requiring purgatives), cough, skin diseases, stomach ailments, fever, gynaecological problems, haemorrhoids, liver ailments, lice, swellings, dental trouble, ulcers, and problems of the urinary tract.
- F. Many families, of all socio-economic strata, engaged in trade, international or national, or local. These substances, according to merchants' letters and other documents, played a major part in all chains of commerce, at stations along trade routes, and in local and international trade. In other words, some of the medicinal substances were supremely important commodities for the internal and international commerce of the Jewish community of Cairo and other cities of Egypt, and in the Mediterranean region, the Muslim empire, etc.
- G. Jewish traders had an advantage over Muslims and Christians owing to the widespread diaspora all over the ancient world, especially in port cities, and in other countries and cities with commercial activity. Family members of some physicians and pharmacologists engaged in such businesses as well.

- H. Egypt was apparently one of the production centres of a few substances; others were imported from India and south-east Asia, Yemen, Arabia, North Africa, Sicily, Crete, Europe, and the Levant.
- I. Some substances were exported from Egypt to south-east Asia, North Africa, Sicily, Europe, and the Levant. Examples are alum, aniseed, cinnamon, clove, flax, henna, indigo, meadow saffron, mumie, pepper, purging cassia, safflower, sal ammoniac, salep, and sugar.
- J. Substances of animal and inorganic origin, and more particularly medicinal plants, played a major part in the lives of the Genizah people. They encountered some of these substances in almost every daily secular or religious activity; the substances also served as foodstuffs, herbs, condiments, cosmetics, and incense, and for various home industries such as dyeing, ink production, tanning, and more.
- K. The use of animals as medicinal substances is well known and documented in medieval literature. The theoretical list of *materia medica* contains a considerable number of such substances; examples are bear, beetle, camel, civet, crow, eagle, elephant, frog, hyena, lard, leech, lion, medical skink, Nile crocodile, ostrich, rhinoceros, swallow, and turtle. Yet in the list of practical *materia medica* some are not present at all and others appear very rarely. We suggest that it is not because they were hard to get but owing to Halachic problems. The use of mumie and adder flesh (as part of theriac) is mentioned here and there throughout the Halachic literature, some of which was written in medieval Egypt. Finding records for the practical medical uses of such substances in the Genizah documents thus confirms the medieval reality: the use of unclean animals when needed.



PART D

BIBLIOGRAPHY, APPENDIXES AND INDEXES



## APPENDIX ONE

### PRACTICAL *MATERIA MEDICA*

The data presented in this appendix are the practical medicinal substances used by the Genizah people in medieval Cairo according to prescriptions, lists of *materia medica*, and letters of physicians. The state of preservation of our sources, namely Genizah fragments, is not uniform. Sometimes the documents are complete and the medicinal uses are noted; in these cases they are presented in the column headed 'Practical medicinal uses'. At other times we could conjecture the medical uses by comparisons with medieval medical books of the same period. However, in most cases the fragments are incomplete and the medicinal uses are not mentioned (e.g., in all the lists of *materia medica*). Therefore, we added a column headed 'Theoretical medicinal uses (selective)'. This information was extracted from medical literature found in the Genizah and cited here to give the reader comparative information on the medicinal uses of each substance.

The data are arranged according to the origin of the medicinal substances: animal, inorganic, and plant. The items are in alphabetical order of the English common names.

The following are the abbreviations used in the table.

T- total number of times the substances is mentioned in Genizah practical sources

L - number of times mentioned in lists

P - number of times mentioned in prescriptions

Table 15 Animals

No.	Common name	Scientific name	T	L	P	Practical medicinal uses	Theoretical medicinal uses (selective)
1	Adder	<i>Echis coloratus</i>	1	0	1		Theriac, poisoning, skin diseases
2	Ambergris	<i>Physter catodom</i>	2	1	1	Lincti and ointment	Headaches and diseases of the brain, aphasia spasms of muscles, tension, shaking and facial palsy, obstructions, winds, diarrhoea, pleurisy and trembling
3	Beaver (Castoreum)	<i>Castor fiber</i>	4	1	3	Eye diseases	Eye diseases, headaches, brain diseases, jaundice, fevers, palpitation, paresis, weakness of sexual organ, and as aphrodisiacs
4	Bird		1	1	0		Dentistry and oral hygiene, increasing men's sexual power, partial paralysis
5	Caracal	<i>Felis [Lynx] caracal</i>	1	0	1		
6	Cattle Products (cheese, milk, cream)	<i>Bos taurus</i>	18	13	5	Dressing bites, topical application, swellings, eye complaints	Stomach ailments, asthma, gout, piles, liver and kidney diseases, swelling
7	Chicken, Products	<i>Gallus gallus domesticus</i>	8	4	4	Stops bleeding, dressing bites	Eye diseases, inflammatory swellings
8	Coral	Coelenterate System	6	2	4	Dental problems	Treatment of obstruction, wind, diarrhoea, pleurisy and trembling, eye, heart and teeth diseases
9	Crab [crayfish]	Decapoda	1	1	0		Eye and skin diseases, dog bites, scorpion sting, and for cleaning the teeth
10	Cuttle-fish	<i>Sepia officinalis</i>	4	0	4	Dental uses	Eye diseases, dentistry

Table 15 (cont.)

No.	Common name	Scientific name	T	L	P	Practical medicinal uses	Theoretical medicinal uses (selective)
11	Donkey [Ass] (milk, feces)	<i>Equus asinus</i>	8	1	7	Cleaning or treating the teeth, muscles pain, invalid diet, stops bleeding	Lungs, epilepsy, hemorrhoids, eye disease
12	Earthworm	<i>Lumbricus terrestris</i>	1	0	1	Dental uses	Binding nerves, treating blockages in the urinary tract, and treating ear and tooth pains
13	Fish		3	3	0		Skin diseases, constipation, poisoning, bites and stings
14	Goat [products]	<i>Capra hircus mambrica</i>	3	1	2		Eye and skin diseases, dentistry, poisonings
15	Honey	<i>Apis mellifica</i>	23	4	19	Eye diseases, cough, diet, aphrodisiac, oxymel, medical plaster	Coughs, eye diseases, aphrodisiac, phlebotomy
16	Kermes	<i>Kermes sp.</i>	1	0	1		Fever, preventing pregnancy and stopping menstruation
17	Lac	<i>Laccifer lacca</i>	6	4	2		Dressing applied to the liver region and for other internal organs
18	Mollusc [operculum]	Strombidae and Muricidae	6	6	0		Skin diseases, wounds in the stomach, arithritis, eye and ear diseases, purgative, emetic treatment of uterus, diseases, epilepsy, paralysis
19	Musk	<i>Moschus moschiferus</i>	6	4	2	strengthen gums and lips	Headaches and diseases of the brain, paresis and weakness of sexual organ, aphrodisiacs, winds, wart, dysuria, dysmenorrhoea, hard swellings and as abortifacient



Table 15 (cont.)

No.	Common name	Scientific name	T	L	P	Practical medicinal uses	Theoretical medicinal uses (selective)
20	Pearl	<i>Pinctada margaritifera</i>	7	3	4	Eye diseases	Eye diseases, depression, palpitations, fevers, strengthening the stomach and liver
21	Silk worm [cocoons and products]	<i>Bombyx mori</i>	2	0	2		Palpitations, general tonic, swellings and throat infections, treat a rapid pulse beat, hemorrhoids, stomach diseases, pains of the teeth and stomach
22	Snail	<i>Helix sp.</i>	2	0	2	Dental caries, dentifrice powder	Skin diseases, intestinal wounds, joint infections, diseases of the ears and eyes, dog bite, inducing vomiting and stimulating menstruation
23	Spiny-tailed lizard	<i>Uromastix aegypticus</i>	1	0	1		Eye and heart diseases, squint
24	Wax	<i>Apis mellifica</i>	15	4	11	Eye diseases, depilatory for hairy women, aphrodisiac	Skin diseases, spreading ulcers, fevers, sciatica, varicose veins, phlebotomy, convulsion, tetany, colic

Table 16 Inorganics

No.	Common name	Scientific name	T	L	P	Practical medicinal uses	Theoretical medicinal uses (selective)
1	Agate	$\text{SiO}_2$	1	0	1		
2	Alum	$\text{Alk}(\text{SO}_4)_2 \cdot 12\text{H}_2\text{O}$	8	2	6	Cleaning and treating the teeth	Eye diseases, teeth, cosmetics
3	Arsenic	$\text{AS}_2\text{S}_3$ ; $\text{AS}_2\text{S}_2$	7	4	3	Depilatory for hairy women, medicinal soap	Necrotic lesions, stomach ailments and gum diseases
4	Asphalt		4	2	2	Plaster for	Dentistry, toxicology

Table 16 (cont.)

No.	Common name	Scientific name	T	L	P	Practical medicinal uses	Theoretical medicinal uses (selective)
5	Bezoar stone		1	1	0		Poisoning, eye diseases, fevers
6	Borax	$\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$	7	4	3	Depilatory for hairy women	Stomachic confections, eye diseases, convulsion and tetany, fevers and colic, earaches, wounds, women's diseases
7	Cadmia	Cd	11	1	10	Eye diseases	Eye diseases, dentistry, skin diseases
8	Cinnabar	HgS	1	1	0		
9	Clay (earth, bole)	Armenian earth, Cyprus clay, white clay, Egyptian clay	15	5	10	Hallucination, swelling	Eye diseases, inflammatory swellings of the breast, diarrhoea, epilepsy, intestinal ulcer, colic, kidneys and bladder disease
10	Copper	Cu	1	0	1		Eye diseases
11	Cuprite	$\text{Cu}_2\text{O}$	5	4	1		Eye diseases
12	Gold		1	0	1		Eye diseases, heart problems and diseases as well as psychiatric diseases
13	Gypsum	$\text{CaSO}_4$	1	0	1		
14	Haematite	$\text{Fe}_2\text{O}_3$	6	4	2		Eye diseases, dentistry
15	Kohl [Antimony, Galena]	Sb, PbS	11	6	5	Eye diseases	Eye diseases
16	Lapis lazuli	$(\text{Na}, \text{Ca})_8 (\text{AlSiO}_4)_6 (\text{S}, \text{SO}_4, \text{Cl})_{1-2}$	15	8	7	Hallucination, aphrodisiac	Theriac, stops excessive lachrymation, helps the eyelashes to grow
17	Lead, white (Ceruse)	$2\text{PbCO}_3 \cdot \text{Pb}(\text{OH})_2$	15	7	8	Eye diseases, aphrodisiac, itches	Eye and skin diseases, umbilical hernia and incessant crying
18	Litharge	PbO	2	1	1		Eye and skin diseases
19	Mercury	Hg	6	0	6		Dripping of urine and for caculi, kills lice and fleas, skin diseases

Table 16 (cont.)

No.	Common name	Scientific name	T	L	P	Practical medicinal uses	Theoretical medicinal uses (selective)
20	Minium	Red lead oxide	1	0	1		Abscesses, boils, and lacerations
21	Mumie		1	1	0		Headache, ear and throat pains, coughs, paralysis, heart and stomach disorders, broken bones, wounds of the sex organs and for internal uses such as renal disorders
22	Potash	$K_2CO_3$ ; $Na_2CO_3$	6	3	3	Dental problems	Dentistry, cause miscarriage
23	Pyrite [Marcasite]	$FeS_2$	1	0	1		Eye and skin diseases
24	Sal-ammoniac	$NH_4Cl$	6	3	3	Eye diseases	Eye diseases and diphtheria
25	Salt	$NaCl$	26	10	16	Cleaning and treating the teeth, stomach and digestive ailments, eye diseases, purgative	Eye diseases, pustules on the tongue, exophthalmoses, sciatica, toothache, stomach aches, pains in the spleen
26	Scoria		6	3	3	Eye diseases	Dentistry and oral hygiene, ear pains, wounds, stop excessive lachrymation
27	Silver	$Ag$	3	0	3		Eye and skin diseases, heart disorders, hemorrhoids, improves bad breath, diuretic
28	Sulphur	Sulfur (S)	6	4	2	Itches, snake bite	Skin diseases, animal bites, paralysis, migraine, wounds, mental illnesses
29	Vitriol [verdigris]	Green – $FeSO_4$ , blue – $CuSO_4$ , white – $ZnSO_4$ , $CuSO_{4.5}H_2O$	8	4	4	Eye diseases	Chronic diseases, necrotic lesions, skin and eye diseases
30	Zinc	$Zn$	16	8	8	Lice treatment, weakness of the eye sight, migraine	Eye and skin diseases

Table 17 Plants

No.	Common name	Scientific name And botanical family	T	L	P	Practical medicinal uses	Theoretical medicinal uses (selective)
1.	Acacia	<i>Acacia sp.</i> (Mimosaceae)	1	1	0		Eye diseases, umbilical hernia, incessant crying, septic conditions near the ear
2.	Agaric	<i>Agaricus sp.</i> (Agaricaceae)	15	3	12	Headache [migraine], weakness of the eye sight, aphrodisiac, purgative	Eye diseases, heart, poisoning
3.	Agrimony [liverwort]	<i>Agrimonia eupatoria</i> (Rosaceae)	1	1	0		Fevers, poisoning, animals bites and stings, eye diseases, liver ailments
4.	Aajava	<i>Carum copticum</i> (Apiaceae)	1	1	0		Eye diseases, cough, colds, indigestion, hemorrhoids, stomach ailments, colic
5.	Almond	<i>Amygdalus communis</i> = <i>Prunus amygdalus</i> (Rosaceae)	41	14	27	Weakness of the eye sight, migraine, eye treatment, aphrodisiac, laxative, face and eye treatment, fever, dressing bites, cough	Eye diseases, fevers, hectic and septic fevers, cancer, erysipelas, soft and hard inflammatory swellings and elephantiasis
6.	Aloe	<i>Aloe sp.</i> (Liliaceae)	21	8	13	Topical application, weakness of the eyesight, migraine, eye diseases: inflammation, dimness of vision, widening of the pupils.	Eye diseases, purgative

Table 17 (cont.)

No.	Common name	Scientific name And botanical family	T	L	P	Practical medicinal uses	Theoretical medicinal uses (selective)
7.	Aloe wood	<i>Aquilaria agallocha</i> (Thymelaeaceae)	19	8	11	Aphrodisiac, ease itches, lincti and ointment	Fevers, dentistry
8.	Ammoniacum (gum ammoniac)	<i>Dorema ammoniacum</i> (Apiaceae)	4	0	4		Eye diseases, purgative
9.	Amomum	<i>Amomum sp.</i> (Zingiberaceae)	10	1	9	Eye treatment, cleaning or treating the teeth	Palpitation, theriac, purgative, general tonics, indigestions, haemorrhoids, looseness of bowels, stomach ailments, colic
10.	Anemone	<i>Anemone coronaria</i> (Ranunculaceae)	1	1	0		Eye and skin diseases
11.	Anise	<i>Pimpinella anisum</i> (Apiaceae)	16	4	12	Eye complaints, invalid diet, weakness of the eye sight, migraine	Eye diseases, palpitation,
12.	Apple	<i>Malus pumila</i> (= <i>Pyrus malus</i> = <i>Malus sylvestris</i> ) (Rosaceae)	3	1	2		Fevers, purgative, general tonic
13.	Apricot	<i>Prunus armeniaca</i> (Rosaceae)	3	0	3		Eye diseases, fevers, stomach-ache
14.	Arar-tree	<i>Callitris quadrivalvis</i> (Cupressaceae)	4	4	0		Diarrhea, hemorrhage, erysipelas
15.	Asafoetida (Asafetida)	<i>Ferula assa-foetida</i> (Apiaceae)	1	0	1		Colic, dentistry, animal bites
16.	Ash tree	<i>Fraxinus sp.</i> ( <i>excelsior, syriaca</i> ) (Oleaceae)	3	2	1	Eye complaints	Theriac, purgative, sex, aphrodisiac
17.	Asparagus	<i>Asparagus officinalis</i> (Liliaceae)	1	0	1		Eye diseases, animals bites, strengthening medication for the brain and heart

Table 17 (cont.)

No.	Common name	Scientific name And botanical family	T	L	P	Practical medicinal uses	Theoretical medicinal uses (selective)
18.	Asphodel	<i>Asphodelus aestivus</i> (= <i>ramosus</i> ) (Asphodelaceae)	3	2	1		Wounds, draining pus, soothing pains of the chest, spleen and liver, treating respiration, and relieving pains of the joints, back, head, and ears
19.	Azerolier	<i>Crataegus</i> sp. (Rosaceae)	1	1	0		Intestinal problems, astringent, diuretic
20.	Balm	<i>Melissa officinalis</i> (Lamiaceae)	2	1	1		Depression, strengthening the heart, eliminating phlegm, aiding digestion, reducing gases, mild purgative
21.	Balsam of Mecca (Balm of Gilead)	<i>Commiphora gileadensis</i> (= <i>opobalsamum</i> ) (Burseraceae)	2	1	1		Eye diseases, epilepsy, palpitation, theriac, purgative, stomach ailments
22.	Bamboo [Chalk, ṭabāshīr]	<i>Bambusa vulgaris</i> (Poaceae)	17	6	11	Medical compounds and powder	Jaundice, fever, palpitation, loss of teeth, strengthen the stomach diarrhea, weakness of the liver and bile corruption, quatrain fever
23.	Banana	<i>Musa paradisiaca</i> (Musaceae)	1	1	0		Liver and spleen diseases
24.	Barley	<i>Hordeum</i> sp. (Poaceae)	2	0	2	Lips complaints, strengthens the gum	Women's complaints, menorrhagia, liver diseases, cosmetics and topical uses

Table 17 (cont.)

No.	Common name	Scientific name And botanical family	T	L	P	Practical medicinal uses	Theoretical medicinal uses (selective)
25.	Basil	<i>Ocimum basilicum</i> (Lamiaceae)	26	14	12	Invalid diet, fever, cleaning and treating the teeth, purgative	Eye diseases, fevers, colds, stomach ailments and colic, emmenagogues, abortifacients, general tonic
26.	Bdellium	<i>Commiphora mukul</i> (Bursaceae)	16	7	9	Lincti and ointment, invalid diet, weakness of the eye sight and migraine	Colic, diarrhea and strengthen the muscles of the stomach, sciatica, varicose veins, and phlebotomy
27.	Bean	<i>Vicia faba</i> (Fabaceae)	9	0	9	Hemorrhoids, swelling, cough, stomach ailments, face and eyes treatment, wet ulcer	Inflammatory swellings of the breast, excessive lachrymation, jaundice, fever, palpitation
28.	Beet	<i>Beta vulgaris</i> (Amaranthaceae= Chenopodiaceae)	8	0	8	Topical application, swelling	Ophthalmology, inflammations
29.	Ben Tree	<i>Moringa peregrina</i> (Moringaceae)	1	0	1	Cough	Teeth and gums, nosebleeds, increases sexual potency, leprosy, skin diseases, toothache, boils, spleen and the liver, rheumatism, emetic, purgative
30.	Berberry	<i>Berberis cretica</i> (Berberidaceae)	12	6	6	Cough	Diseases of the liver, spleen and bowels
31.	Betel palm (Areca nut)	<i>Areca catechu</i> (Arecaceae)	2	1	1		Skin diseases, stimulants, astringents and to expel worms
32.	Betel-pepper	<i>Piper betel</i> (Piperaceae)	1	1	0		Palpitations, purgative, emmenagogues and abortifacients

Table 17 (cont.)

No.	Common name	Scientific name And botanical family	T	L	P	Practical medicinal uses	Theoretical medicinal uses (selective)
33.	Birthwort	<i>Aristolochia sp.</i> (Aristolochiaceae)	3	1	2	Treatment of vomiting	Wind, warts, dysuria, dysmenorrhoea and hard swellings
34.	Bitter-vetch	<i>Vicia ervilia</i> (Fabaceae)	1	1	0		Skin diseases, cancer, burns, poisoning
35.	Bitumen trefoil	<i>Bituminaria bituminosa</i> (Fabaceae)	1	0	1		
36.	Black cumin	<i>Nigella sativa</i> (Ranunculaceae)	3	1	2		Eye and skin diseases, fevers, poisoning
37.	Black Spleenwort	<i>Asplenium onoperis</i> (Aspleniaceae)	7	6	1		Hemorrhoids and ailments of the intestines, and for urine flow
38.	Borage	<i>Anchusa sp.</i> ( <i>italica</i> and <i>officinalis</i> ) (Boraginaceae)	24	7	17	Hallucination, weakness of the eyesight, migraine, fever, invalid diet, aphrodisiac	Cleanses the stomach, relieves pains of the kidney and spleen, reduces swellings, disinfects wounds, skin diseases, strengthens eyesight, effective against madness and melancholy, relieves pains of the mouth, teeth, chest, lungs, cures coughs and heartburns, treats jaundice
39.	Bottle gourd	<i>Lagenaria vulgaris</i> (Cucurbitaceae)	12	5	7	Fever, cough, plaster, ointment	Eye diseases, skin diseases, fevers, dentistry
40.	Box	<i>Buxus sempervirens</i> (Buxaceae)	2	1	1		Headaches and wounds
41.	Box-thorn	<i>Lycium afrum</i> (Solanaceae)	9	7	2	Eye diseases, linctus for cough	Eye diseases, skin diseases, cough, dog bites



Table 17 (cont.)

No.	Common name	Scientific name And botanical family	T	L	P	Practical medicinal uses	Theoretical medicinal uses (selective)
42.	Broad-leaved pepperwort	<i>Lepidium latifolium</i> (Brassicaceae)	1	1	0		Skin diseases
43.	Bryony	<i>Bryonia cretica</i> (Cucurbitaceae)	1	1	0		Skin diseases, diuretic and purgative drug, helps treat ulcers and abscesses
44.	Cabbage	<i>Brassica oleracea</i> (Cruciferae)	1	0	1		Purgative, reducing swellings in the limbs, curing cough, pains of the spleen, burns, skin diseases, dog bite, headache, cancer, and hemorrhoids
45.	Calamus (Sweet-flag)	<i>Acorus calamus</i> (Araceae)	2	0	2		Hernia, stomach ailments, gastro-intestinal complaints, colic, general tonic
46.	Camphor	<i>Cinnamomum camphora</i> (Lauraceae)	20	13	7	Eye diseases, swellings, stop bleeding	Jaundice, eye diseases, fevers, pain, swelling
47.	Cannabis (Indian Hemp)	<i>Cannabis sativa</i> var. <i>indica</i> (Cannabaceae)	5	4	1		Eye diseases, insanity and epilepsy
48.	Caraway	<i>Carum carvi</i> (Apiaceae)	5	3	2		Headaches, smallpox, kidney stones, stomach worms, reduces swellings, induces sleep
49.	Cardamom	<i>Elettaria cardamomum</i> (Zingiberaceae)	13	7	6	Fevers	Colic, cough, kidney stones, skin diseases
50.	Carob	<i>Ceratonia siliqua</i> (Caesalpiniaceae)	2	1	1		Stomach, swellings, emmenagogue, stops bleeding, abortifacient
51.	Carrot (wild and cultivated)	<i>Daucus carota</i> (Apiaceae)	6	3	3	Linctus for cough	Eye diseases, palpitations, purgative, sexual problems

Table 17 (cont.)

No.	Common name	Scientific name And botanical family	T	L	P	Practical medicinal uses	Theoretical medicinal uses (selective)
52.	Cassia (Senna)	Especially: <i>Cassia acutifolia</i> (Fabaceae)	18	5	13	Fevers, aphrodisiac	Bladder stones, purgative, eye diseases, women's illnesses, epilepsy, smallpox
53.	Cassia, purging	<i>Cassia fistula</i> (Fabaceae)	11	3	8	Diet, aphrodisiac, plaster	Swellings, soothing nerves, purgative, animal bites
54.	Castor oil	<i>Ricinus communis</i> (Euphorbiaceae)	2	1	1		Skin diseases, convulsion, tetany, fevers, colic, purgative
55.	Cedar	<i>Cedrus libani</i> (Pinaceae)	6	6	0		Eye diseases
56.	Celandine (swallow-wort)	<i>Chelidonium majus</i> (Papaveraceae)	3	1	2	Dental and oral hygiene	Eye diseases, diuretic
57.	Celery	<i>Apium graveolens</i> (Apiaceae)	10	2	8	Weakness of the eyesight, migraine, purgative	Pains (including joints), palpitation, theriac, sand in kidney, wounds, indigestion, haemorrhoids, looseness of bowels, stomach ailments, colic; purgative
58.	Centaury	<i>Centaurea sp.</i> (Asteraceae)	1	0	1		Eye diseases, sciatica, lameness, backaches, rheumatic pains, diuretic, internal diseases (liver, stomach)
59.	Chamomile	<i>Matricaria aurea</i> (Asteraceae)	1	0	1		Eye and skin diseases
60.	Chate melon	<i>Cucumis melo var. chate</i> (Cucurbitaceae)	9	4	5	Liver ailments, cough, aphrodisiac	Liver diseases, fevers, sex diseases

Table 17 (cont.)

No.	Common name	Scientific name And botanical family	T	L	P	Practical medicinal uses	Theoretical medicinal uses (selective)
61.	Cherry	<i>Prunus avium</i> (sweet cherry), <i>P. cerasus</i> L. (sour cherry) (Rosaceae)	19	10	9	Medical diet, aphrodisiac	Aphrodisiac, light purgative, emetic
62.	Chickling-vetch	<i>Lathyrus sativus</i> (Fabaceae)	2	1	1		Eye diseases
63.	Chickpeas	<i>Cicer arietinum</i> (Fabaceae)	2	1	1	General health, topical application	Skin diseases, sore joints, rheumatism
64.	Christ's thorn jujube	<i>Ziziphus spina-christi</i> (Rhamnaceae)	2	0	0	Cough	Bee and wasp stings, hemorrhages and diarrhea
65.	Cinnamon	<i>Cinnamomum sp.</i> ( <i>zeylanicum</i> and <i>cassia</i> ) (Lauraceae)	16	7	9	Weakness of the eyesight, migraine	Eye diseases, colds and coughs, obstruction, wind, diarrhoea, pleurisy and trembling, coughs, cold, palpitation, theriac, purgative, general tonic, stomach ailments and colic
66.	Citron	<i>Citrus medica</i> (Rutaceae)	6	2	4	Weakness of the eyesight, migraine	Eye and skin diseases, fevers
67.	Clove	<i>Eugenia caryophyllata</i> (Myrtaceae)	15	9	6		Cold, coughs, freshens the breath, treats gum and stomach disorders, eye diseases
68.	Coconut palm (coconut)	<i>Cocos nucifera</i> (Cocaceae)	1	1	0		Eye diseases, coitus, increases semen, strengthens the kidneys, strengthens the male sexual organ

Table 17 (cont.)

No.	Common name	Scientific name And botanical family	T	L	P	Practical medicinal uses	Theoretical medicinal uses (selective)
69.	Colocynth (bitter gourd, bitter apple)	<i>Citrullus colocynthis</i> (Cucurbitaceae)	4	1	3	Purgative	Purgative, gargle for swollen throat, eases tooth extraction
70.	Common caper	<i>Capparis spinosa</i> (Capparaceae)	2	0	2		Skin diseases, dentistry, poisoning
71.	Common reed	<i>Phragmites australis</i> (= <i>P. communis</i> ) (Poaceae)	4	3	1		Diuretic, alopecia, bites, skin diseases, erysipelas
72.	Coriander	<i>Coriandrum sativum</i> (Apiaceae)	9	3	6	Hallucination, topical application, weakness of the eye sight, migraine	Eye diseases, diarrhoea, inflammatory swellings of the breast, fevers, headaches
73.	Cornelian cherry	<i>Cornus mas</i> (Cornaceae)	1	1	0		Stimulates sexual desire, antidote to poisons and animal venom, induces urine flow
74.	Costus (Arabian costus)	<i>Costus speciosus</i> (Costaceae)	19	12	7	Medical chewing gum	Eye problems, stones in the bladder, black bile and phlegm, convulsion and tetany, fevers and colic, epilepsy, internal ulcer, colic, kidneys and bladder diseases, coughs and colds
75.	Cotton	<i>Gossypium herbaceum</i> (Malvaceae)	3	2	1		Coughs, increases sexual desire
76.	Cubeb pepper	<i>Piper cubeba</i> (Piperaceae)	5	3	2		Cures gum and mouth sores, dentistry, diuretic, opens obstructions in the liver
77.	Cucumber	<i>Cucumis sativus</i> (Cucurbitaceae)	5	2	3		Fevers, sexual diseases, diuretic, stomach

Table 17 (cont.)

No.	Common name	Scientific name And botanical family	T	L	P	Practical medicinal uses	Theoretical medicinal uses (selective)
78.	Cumin	<i>Cuminum cyminum</i> (Apiaceae)	6	4	2	Cough	Eye diseases, stomach and liver complaints
79.	Cypress-tree	<i>Cupressus sempervirens</i> (Cupressaceae)	4	0	4		Eye diseases, dentistry, diarrhoea, and hernia
80.	Dates	<i>Phoenix dactylifera</i> (Arecaceae)	4	2	2	Aphrodisiac	Skin diseases, aphrodisiac, for the increasing the male vigour and for the treatment of diarrhoea
81.	Dill (Anet)	<i>Anethum graveolens</i> (Apiaceae)	1	0	1		Skin diseases, fevers, poisoning
82.	Dodder	<i>Cuscuta sp.</i> (Cuscutaceae = Convolvulaceae)	5	3	2		Cold headache, sciatica, varicose veins, strengthens penile erection
83.	Dodder of thyme (lesser or heath dodder)	<i>Cuscuta epithymum</i> (Convolvulaceae)	8	0	8	Hallucination	Skin diseases, fevers, poisoning, palpitations
84.	Dragon's blood	<i>Dracaena draco</i> (Dracaenaceae)	3	3	0		Fistula, hemorrhoids, cancer and looseness of the gums, strengthens the stomach, treatment of bleedings, open wounds and diarrhoea
85.	Eggplant	<i>Solanum melongena</i> (Solanaceae)	3	2	1		Strengthens the stomach, increases urination, relieves headaches and earaches

Table 17 (cont.)

No.	Common name	Scientific name And botanical family	T	L	P	Practical medicinal uses	Theoretical medicinal uses (selective)
86.	Egyptian clover	<i>Trifolium alexandrinum</i> (Fabaceae)	1	0	1	Linctus for treating cough	Holds back the fetus
87.	Egyptian marjoram	<i>Origanum maru</i> (Lamiaceae)	1	0	1		Swellings
88.	Elecampane	<i>Inula helenium</i> , <i>I. conyzae</i> (Asteraceae)	3	3	0		Colds, joint pains, strengthens the heart and stomach, arouses sexual desire and stimulates coitus
89.	Endive (Chicory)	<i>Cichorium intybus</i> (and <i>C. endivia</i> , <i>C. pumilum</i> ) (Asteraceae)	34	11	23	Invalid diet, plaster for swelling, aphrodisiac, fevers, liver, weakness of the eyesight, migraine	Fevers, cancer, erysipelas, soft and hard inflammatory swellings and elephantiasis, liver and eye diseases
90.	Eringo	<i>Eryngium sp.</i> (Apiaceae)	1	1	0		Harden erection, reduces gases
91.	Fennel	<i>Foeniculum vulgare</i> (Apiaceae)	15	1	14	Weakness of the eyesight, migraine, haemorrhoids, fevers, aphrodisiac	Hernia, eye diseases, headaches and diseases of the brain, topical application
92.	Fenugreek	<i>Trigonella foenum-graecum</i> (Fabaceae)	4	1	3		Eye diseases, stomach complaints
93.	Frankincense (olibanum)	<i>Boswellia carteri</i> (= <i>B. sacra</i> ) (Burseraceae)	16	10	6	Cleaning and treating the teeth, medical chewing gum	Eye diseases, teeth loss, skin diseases, dog bite and stings of the scorpion and spider, stops hemorrhages
94.	Fumitory	<i>Fumaria officinalis</i> (Fumariaceae)	1	0	1		Melancholy, diuretic, skin diseases, cleans the blood, strengthens the stomach

Table 17 (cont.)

No.	Common name	Scientific name And botanical family	T	L	P	Practical medicinal uses	Theoretical medicinal uses (selective)
95.	Galbanum	<i>Ferula galbaniflua</i> (Apiaceae)	6	4	2	Liver ailments	Eye diseases, insanity
96.	Galingale	<i>Alpinia galanga</i> (Zingiberaceae)	4	1	3		Sexual diseases, stomach problems, strengthens respiration, dentistry
97.	Garden cress (pepper grass)	<i>Lepidium sativum</i> (Brassicaceae)	12	1	11	Cough, fever, hallucination	Skin diseases, dentistry, diarrhoea, strengthens the muscles of the stomach
98.	Garden rocket	<i>Eruca sativa</i> (Brassicaceae)	5	2	3		Eye diseases, increases the strength of the sperm, increases sexual desire, cures internal diseases, opens obstructions in the urinary tract, increases milk in breastfeeding women, and dispels gases
99.	Garlic	<i>Allium sativum</i> (Alliaceae)	5	4	1		Eliminates intestinal worms, cleanses the throat, relieves chronic coughs and toothache, skin and eye diseases, emmenagogue
100.	Ginger	<i>Zingiber officinale</i> (Zingiberaceae)	8	3	5		Diseases of the kidney, winds in the stomach, paresis and limpness (weakness) of the sexual organ and aphrodisiac, strengthens penile erection

Table 17 (cont.)

No.	Common name	Scientific name And botanical family	T	L	P	Practical medicinal uses	Theoretical medicinal uses (selective)
101.	Grape Vine (products: wine, vinegar, raisins)	<i>Vitis vinifera</i> (Ampelidaceae = Vitaceae)	29	7	22	Weakness of the eyesight, migraine, aphrodisiac, topical application, muscles pain, swellings	Snakebites, paresis and limpness (weakness) of the sexual organ; aphrodisiac
102.	Gum arabic (Babul Acacia)	<i>Acacia nilotica</i> (Mimosaceae)	21	7	14	Weakness of the eyesight, migraine, eye diseases, cough, depilatory for hairy women, stomach ailments	Eye diseases, strengthens the stomach, diarrhoea, abdominal pains, dysuria and fevers, loss of teeth and leucoderma
103.	Hazelnuts	<i>Corylus avellana</i> (Betulaceae = Corylaceae)	5	1	4	Dressing bites, cough	Poisoning, cleanses the intestines, improves memory, hemorrhages in the chest and lung, treats scorpion bites, reduces gases, causes constipation and vomiting
104.	Hellebore	<i>Helleborus niger</i> and <i>H. albus</i> (Ranunculaceae)	2	0	2		Eye and skin diseases, diuretic, warts, epilepsy, madness, drains black bile, eases tooth ache
105.	Henbane (Hemlock)	<i>Hyoscyamus albus</i> (Solanaceae)	2	1	1		Eases tooth and ear pains, stops bleedings, eye diseases, blood spitting and women's diseases
106.	Henna	<i>Lawsonia inermis</i> ( <i>alba</i> ) (Lythraceae)	7	4	3	Stops bleedings, medical plaster	Skin diseases, teeth problems



Table 17 (cont.)

No.	Common name	Scientific name And botanical family	T	L	P	Practical medicinal uses	Theoretical medicinal uses (selective)
107.	Horehound	<i>Marrubium vulgare</i> (Lamiaceae)	1	0	1		Eye diseases
108.	Horned Poppy	<i>Glaucium corniculatum</i> (Papaveraceae)	2	1	1		Eye diseases, to relieve pains, and to soothe
109.	Hypocist [Rape of Cistus]	<i>Cytinus hypocistis</i> (Rafflesiaceae)	3	2	1		Diarrhoea, indigestion, bleedings and weak joints
110.	Hyssop	<i>Hyssopus officinalis</i> (Lamiaceae)	1	0	1		Malaria, chest and lungs, chronic coughs, good for the stomach
111.	Indigo	<i>Indigofera tinctoria</i> (Fabaceae)	7	6	1		Skin diseases, swellings, wounds
112.	Iris	<i>Iris florentina</i> L. or <i>I. Mesopotamica</i> (Iridaceae)	3	2	1		Skin diseases, dentistry, convulsion, tetany, fevers and colic
113.	Jasmine	<i>Jasminum sp.</i> (Oleaceae)	1	0	1	Eye diseases	Headache, dentistry, hemorrhoids
114.	Jews' mallow	<i>Corchorus olitorius</i> (Tiliaceae)	3	3	0		Skin diseases, poisoning
115.	Judas-tree	<i>Cercis siliquastrum</i> (Fabaceae)	2	1	1		Fistula, itching, serious wounds and cancer
116.	Jujube	<i>Ziziphus vulgaris</i> (Rhamnaceae)	18	9	9	Haemorrhoids, fevers, medical diet	Skin diseases, bubo and scrofula
117.	Juniper	<i>Juniperus sp.</i>	1	1	0		Dentistry, diseases of the heart
118.	Ladanum	<i>Cistus ladaniferus</i> (Cistaceae)	13	12	1		Dentistry, embrocation for leucoderma, sexual problems
119.	Laurel	<i>Laurus nobilis</i> (Lauraceae)	5	3	2	Purgative, lincti and ointment	Skin and eye diseases, poisoning

Table 17 (cont.)

No.	Common name	Scientific name And botanical family	T	L	P	Practical medicinal uses	Theoretical medicinal uses (selective)
120.	Lavender	<i>Lavandula officinalis</i> (Lamiaceae)	14	1	13	Hallucination, weakness of the eyesight, migraine, invalid diet	Pain in the joints, eye inflammation, dimness of vision and widening of the pupils, eye complaints, lippitude, inversion and lice of the eyelids
121.	Leek	<i>Allium porrum</i> (Alliaceae)	4	0	4		Skin and eye diseases, poisoning, dentistry, diarrhoea and digestion problems
122.	Lemon	<i>Citrus limon</i> (Rutaceae)	20	8	12	Fever, invalid diet, medical plaster	Purgative, necrotic lesions, poisoning, headaches, fainting
123.	Lemon-grass	<i>Andropogon schoenanthus</i> (= <i>Cymbopogon parkeri</i> ) (Poaceae)	2	0	2		Eye diseases, palpitation, purgative, stomach ailments, liver disease, colic, general tonic
124.	Lentil	<i>Lens esculenta</i> (Fabaceae)	4	0	4	Treatment of lice	Skin and eye diseases, dentistry, headache, winds, warts, dysuria, swellings
125.	Lentisk	<i>Pistacia lentiscus</i> (Anacardiaceae)	31	15	16	Stomach problems, strengthens gum, cleans and treats the teeth	Eye diseases, umbilical hernia and incessant crying, fever, burning of black bile and phlegm, obstruction, wind, diarrhoea, pleurisy and trembling

Table 17 (cont.)

No.	Common name	Scientific name And botanical family	T	L	P	Practical medicinal uses	Theoretical medicinal uses (selective)
126.	Leopards-bane (panther strangler)	<i>Doronicum scorpioides</i> (Asteraceae)	4	1	3		Eye diseases, eliminates the desire for coitus
127.	Lettuce	<i>Lactuca sativa</i> (Asteraceae)	2	0	2	Eye diseases, lincti and ointment	Skin diseases, dentistry, poisoning, umbilical hernia and incessant crying
128.	Lichen	<i>Usnea sp.</i> (Parmeliaceae)	3	2	1	Eye diseases	Cold, coughs, heart diseases, improves eyesight, anesthetic
129.	Licorice	<i>Glycyrrhiza glabra</i> (Fabaceae)	32	10	22	Cleaning and treating the teeth, cough, aphrodisiac, invalid diet, skin diseases such as freckles, chronic ulcers and tinea of the scalp, emmenagogue, expels the foetus	Eye diseases, purgative, jaundice, acute fever, palpitation, inflammations, dimness of vision
130.	Linseed (flax)	<i>Linum usitatissimum</i> (Linaceae)	3	0	3		Eye diseases, convulsion and tetany, fevers and colic
131.	Long pepper	<i>Piper longum</i> (Piperaceae)	8	3	5	Eye diseases	Eye diseases, palpitation, theriac, purgative, general tonics, indigestions, haemorrhoids, stomach ailments, colic
132.	Lotus	<i>Nymphaea sp.</i> ; <i>Nuphar sp.</i> (Nymphaeaceae)	8	7	1		Eye and skin diseases, aphrodisiac

Table 17 (cont.)

No.	Common name	Scientific name And botanical family	T	L	P	Practical medicinal uses	Theoretical medicinal uses (selective)
133.	Lovage	<i>Levisticum officinale</i> (Apiaceae)	1	0	1		Chronic and new coughs, earache, stomach ailments, expel worms, induces menstruation
134.	Madder	<i>Rubia tinctoria</i> (Rubiaceae)	4	1	3		Pains, skin diseases, hemorrhoids, accelerate menstruation, cure teeth, cleanses the spleen, liver, and internal organs, leprosy, induces urine
135.	Maidenhair	<i>Adiantum capillus-veneris</i> (Adiantaceae)	3	1	2	Cough, aphrodisiac	Purgative, snakebite, eliminate worms, stones in the urinary tract, expectorant, soothes and cures stomach diseases and skin diseases, haemorrhages, accelerate menstruation, diuretic
136.	Malabathrum	<i>Cinnamomum citriodorum</i> (Lauraceae)	1	0	1		Eye diseases, theriac, purgative, general tonic, stomach ailments, colic
137.	Mandrake	<i>Mandragora autumnalis</i> (Solanaceae)	9	8	1		Poisoning, skin diseases, stomach ailments, insanity, epilepsy
138.	Manna (camel thorn)	<i>Alhagi maurorum</i> (Fabaceae)	3	3	0		Eye and skin diseases, fevers

Table 17 (cont.)

No.	Common name	Scientific name And botanical family	T	L	P	Practical medicinal uses	Theoretical medicinal uses (selective)
139.	Marsh-mallow	<i>Althaea officinalis</i> (Malvaceae)	16	3	13	Eye diseases, aphrodisiac, swelling, medical diet	Sciatica, varicose veins, weakness of the liver and bile corruption, apparent swelling behind the ear and abdominal diseases
140.	Meadow saffron	<i>Colchicum sp.</i> ( <i>autumnale</i> , <i>ritchii</i> ) (Colchicaceae)	4	0	4	Purgative	Dentistry, skin diseases, kidney stones and mental illnesses
141.	Melon	<i>Cucumis melo</i> (Cucurbitaceae)	1	0	1	Medical diet	Diuretic
142.	Mint	<i>Mentha sativa</i> (Lamiaceae)	1	0	1		Diarrhoea, cold and cough, fevers, wind, warts, dysuria, dysmenorrhoea, hard swelling, abortifacient
143.	Mulberry	<i>Morus nigra</i> (Moraceae)	1	1	0		Dentistry, cures intestinal diseases, diarrhoea, burns and wounds, relieves toothaches and backaches
144.	Mustard	<i>Sinapis alba</i> (Brassicaceae)	1	0	1		Eye and skin diseases, colic
145.	Myrobalan (cherry plum)	<i>Terminalia sp.</i> ( <i>arjuana</i> , <i>citrina</i> , <i>chebula</i> , <i>bellerica</i> , <i>emblica</i> ) (Combretaceae)	79	24	55	Hallucination, stomach and digestion, weakness of the eyesight, eye diseases, migraine, invalid diet, aphrodisiac, lincti and ointment	Eye diseases, cold, pain in the joint, headache, inflammation, diarrhoea
146.	Myrrh	<i>Commiphora myrrha</i> (Bursereaceae)	12	6	6	Eye diseases, cough	Stomach and liver complaints, coughs and colds

Table 17 (cont.)

No.	Common name	Scientific name And botanical family	T	L	P	Practical medicinal uses	Theoretical medicinal uses (selective)
147.	Myrtle	<i>Myrtus communis</i> (Myrtaceae)	10	8	2	Lincti and ointment	Eye diseases, general strengthening, stomach ailments, spider bites
148.	Nutmeg	<i>Myristica fragrans</i> (Myristicaceae)	4	2	2		Colic, coughs, colds, strengthens the stomach, improves the appetite and sexual desire
149.	Oak gall	<i>Quercus sp.</i> (Fagaceae)	15	8	7	Haemorrhoids	Skin diseases, diarrhoea, dentistry
150.	Olive oil	<i>Olea europaea</i> (Oleaceae)	11	4	7	Vomiting, swellings, lincti and ointment	Skin and eye diseases
151.	Onion	<i>Allium cepa</i> (Alliaceae)	10	4	6	Topical application, dressing bites, swelling	Eye and skin diseases, paresis and weakness of sexual organ, aphrodisiac
152.	Opium (poppy head)	<i>Papaver somniferum</i> (Papaveraceae)	7	2	5	Wind and colic, eye diseases, collyrium	Dentistry, pains, jaundice, fever, palpitation
153.	Opopanax	<i>Opopanax chironium</i> (Apiaceae)	1	0	1	Wind and colic	Eye diseases, convulsion and tetany, fevers and colic, strengthens penile erection
154.	Oriental plane tree	<i>Platanus orientalis</i> (Platanaceae)	1	1	0		Leprosy, tooth pains
155.	Orpine, stone crop	<i>Sedum sp. or Sempervivum sp.</i> (Crassulaceae)	1	1	0		Eye diseases, fevers, nerves, cleanses the lungs, prevents blood spitting, stops bleeding and eases kidney pains

Table 17 (cont.)

No.	Common name	Scientific name And botanical family	T	L	P	Practical medicinal uses	Theoretical medicinal uses (selective)
156.	Oxymel	Liquid drug made of vinegar (product of vine) and honey	3	0	3	Fever	Colds, coughs, hardness of the spleen, diseases of the liver and abdomen and looseness of the bowels, quartan fever, haematuria, bites of scorpions and reptiles
157.	Papyrus, Nile papyrus	<i>Cyperus papyrus</i> (Cyperaceae)	3	3	0		Eye diseases, cleanses the teeth, heals wounds, hemorrhages, heals infection in the spleen, dental caries, causes lack of appetite, reduces swellings
158.	Parsnip	<i>Malabaila secacul</i> = <i>Pastinaca schekakul</i> (Apiaceae)	2	1	1		Sexual medicine, aphrodisiac
159.	Pear	<i>Pyrus communis</i> (Rosaceae)	4	0	4		Fevers, purgative
160.	Pellitory of Spain	<i>Anacyclus {Anthemis} pyrethrum</i> (Asteraceae)	4	0	4		Eye and skin diseases, dentistry, fevers
161.	Peony	<i>Paeonia sp.</i> (Paeoniaceae)	7	4	3		Epilepsy and insanity
162.	Pepper	<i>Piper nigrum</i> (Piperaceae)	34	21	13	Eye diseases, purgative	Bladderstones, inflammatory conditions of the tongue and gums, excessive lachrymation, paresis and weakness of the sexual organs, aphrodisiac, deafness, ear-ache, headache, pains in the joints

Table 17 (cont.)

No.	Common name	Scientific name And botanical family	T	L	P	Practical medicinal uses	Theoretical medicinal uses (selective)
163.	Perfumed cherry	<i>Prunus mahaleb</i> (Rosaceae)	9	8	1		Washing hands
164.	Pine (nuts)	<i>Pinus pinea</i> (Pinaceae)	1	0	1	Linctus for cough	Bladder, kidney, coughs, colds, stomach ailments, colic
165.	Pistachio	<i>Pistacia vera</i> (Anacardiaceae)	3	2	1		Skin and sexual diseases, general tonic, emmenagogue, abortifacient
166.	Pistachio, Atlantic	<i>Pistacia atlantica</i> (Anacardiaceae)	6	2	4	Medical chewing gum	Dentistry, skin and internal diseases and sex
167.	Plantain (Ribwort)	<i>Plantago afra</i> (Plantaginaceae)	6	4	2	Cough	Umbilical hernia, splitting and falling hair, jaundice, fever, palpitation, diarrhoea, strengthens the stomach, weakness of the liver
168.	Plum	<i>Prunus domestica</i> (Rosaceae)	17	7	10	Fever, haemorrhoids, muscle pain, aphrodisiac	Eye and skin diseases
169.	Polypody	<i>Polypodium vulgare</i> (Polypodiaceae)	9	9	0	Hallucination	Dentistry, liver ailments, blood
170.	Pomegranate	<i>Punica granatum</i> (Punicaceae)	16	7	9	Medical soap, urinary complaints, medical diet	Eye diseases, inflammatory conditions of the tongue and gums, , hectic and septic fevers, cancer, erysipelas, soft and hard inflammatory swellings and elephantiasis



Table 17 (cont.)

No.	Common name	Scientific name And botanical family	T	L	P	Practical medicinal uses	Theoretical medicinal uses (selective)
171.	Purslane (Portulacacea)	<i>Portulaca oleracea</i> (Portulacaceae)	11	4	7	Dressing bites	Eye diseases, hectic and septic fevers, cancer, erysipelas, soft and hard inflammatory swellings and elephantiasis
172.	Quince	<i>Cydonia oblonga</i> (Rosaceae)	12	11	1	Eye complaints, swelling, cough	Strengthens the stomach, diarrhoea
173.	Radish	<i>Raphanus sativus</i> (Brassicaceae)	7	5	2	Snake bites, lice treatment	Eye, throat and skin diseases, deafness, earache, headache, fevers, poisoning
174.	Red-behen (Sea-lavender)	<i>Statice limonium</i> (Plumbaginaceae)	1	0	1		Heart ailments, improves sperm, fortifying the heart, fattening, gout, aphrodisiac
175.	Resin	<i>Pinus sp.</i> (Pinaceae)	3	2	1	Linctus for cough	Skin diseases
176.	Rhubarb	<i>Rheum sp.</i> (Polygonaceae)	15	6	9	Invalid diet	Strengthens the stomach, improves its smell, softens the faeces, cessation of thirst and vomiting, relieves jaundice, regulates the heart beat and improves the appetite
177.	Rose (Dog rose)	<i>Rosa canina</i> (Rosaceae)	71	14	57	Liver ailments, lice treatment, weakness of the eyesight, migraine, eye diseases, lincti and ointments, cleans and treats the teeth, invalid diet,	Eye diseases, umbilical hernia and incessant crying, fevers

Table 17 (cont.)

No.	Common name	Scientific name And botanical family	T	L	P	Practical medicinal uses	Theoretical medicinal uses (selective)
178.	Rosemary	<i>Rosmarinus officinalis</i> (Lamiaceae)	15	14	1	purgative, medical chewing gum	Induces urine flow, accelerates menstruation, opens obstructions in the liver and spleen, cleanses the lungs, cures cough
179.	Rue	<i>Ruta chalepensis</i> ; <i>R. graveolens</i> (Rutaceae)	6	3	3	Eye diseases	Diarrhoea, wind, warts, dysuria, dysmenorrhoea, hard swellings, aphasia, muscle spasms, tension, shaking and facial palsy, bladder, alopecia (topically applied), dysuria
180.	Safflower	<i>Carthamus tinctorius</i> (Asteraceae)	3	2	1		Womb, kidney pains, heart problems, poisonings, obstructions in the urinary tract, purgative
181.	Saffron	<i>Crocus sativus</i> (Iridaceae)	34	21	13	Eye diseases, plaster	Eye and skin diseases, stomach and liver complaints, headache and diseases of brain
182.	Sagapenum	<i>Ferula persica</i> (Apiaceae)	4	3	1	Purgative	Eye diseases, induces vomiting, sciatica, varicose veins
183.	Salep	<i>Orchis sp.</i> (Orchidaceae)	3	1	2		Poisoning, sexual diseases, strengthens respiration, revives the

Table 17 (cont.)

No.	Common name	Scientific name And botanical family	T	L	P	Practical medicinal uses	Theoretical medicinal uses (selective)
							spirits, arouses sexual desire, stiffens the male sexual organ and increases the sperm
184.	Sandalwood (red, white, yellow)	<i>Santalum album</i> (Santalaceae)	2	1	1		Fevers, black bile, diarrhoea
185.	Sarcocolla	<i>Astragalus sarcocolla</i> (Fabaceae)	9	5	4	Eye diseases	Eye diseases, paresis and weakness of the sexual organs, aphrodisiacs
186.	Savory	<i>Satureja sp.</i> (Lamiaceae)	3	0	3		Skin and eye diseases, stomach ailments, colic
187.	Scammony (Syrian bindweed)	<i>Convolvulus scammonia</i> (Convolvulaceae)	17	8	9	Aphrodisiac, purgative, medical chewing gum	Purgative, fevers, paralysis, facial lotion and treatment of abscesses, strengthening
188.	Sea squill	<i>Urginea maritima</i> (Liliaceae)	1	0	1		Eye and skin diseases, dentistry, chest pains, lung diseases, mental distress, exhaustion, oedema, infection in the spleen, kidney stones, obstructions in the urinary tract, joint diseases, ear and tongue ailments
189.	Sebesten	<i>Cordia myxia</i> (Boraginaceae)	8	4	4	Medical diet	Strengthens the stomach and the liver, purgative, malaria

Table 17 (cont.)

No.	Common name	Scientific name And botanical family	T	L	P	Practical medicinal uses	Theoretical medicinal uses (selective)
190.	Sedge (cocoglass, coconut grass)	<i>Cyperus longus</i> (Cyperaceae)	9	5	4	Stomach ailments, cleans and treats the teeth	Palpitation, theriac, purgatives, indigestion, haemorrhoids, looseness of bowels, stomach ailments, colic, emmenagogues, abortifacients, loss of teeth, cold, cough, bladderstones, diarrhoea
191.	Service tree	<i>Sorbus domestica = Pyrus sorbus</i> (Rosaceae)	1	0	1	Hemorrhoids	Headaches, throat and mouth pustules
192.	Sesame	<i>Sesamum indicum</i> (Pedaliaceae)	21	11	10		Stomach complaints, umbilical hernia, incessant crying, convulsion and tetany, fevers, colic, inflammatory swellings of the breast, deafness, earache and throbbing headache
193.	Soap	Made of olive oil, ash and vegetal alkaline substances	4	1	3		Eliminates mucus, intestinal infections, joint pains and skin diseases, causes diarrhoea, eliminates intestinal worms, increases menstrual blood flow, fetal miscarriage, and poisonings

Table 17 (cont.)

No.	Common name	Scientific name And botanical family	T	L	P	Practical medicinal uses	Theoretical medicinal uses (selective)
194.	Sorrel (dock)	<i>Rumex sp.</i> (Polygonaceae)	6	3	3	face and eye diseases	Strengthens the stomach, diarrhoea, weakness of the liver, aphrodisiacs
195.	Spikenard (nard)	<i>Nardostachys jatamansi</i> (Valerianaceae)	32	13	19	Eye diseases	Jaundice, acute fever, palpitation, loss of teeth, intestinal ailments, eye diseases
196.	Spinach	<i>Spinacia oleracea</i> (Amaranthaceae = Chenopodiaceae)	3	0	3	Invalid diet	Fevers, abscess, respiratory diseases and intestinal activity
197.	Spurge (milk-wort)	<i>Euphorbia sp.</i> (Euphorbiaceae)	3	1	2	Linctus for the treatment of cough, medical chewing gum	Purgative, putrescent wounds, mumps, cures insanity
198.	Staphisagria (lousewort)	<i>Delphinium staphisagria</i> (Ranunculaceae)	2	0	2	Treatments of lice	Eye and skin diseases, epilepsy and neck pustules, lice, toothache
199.	Starch	Made from cereal, mainly wheat	6	2	4	Eye diseases	Skin and eye diseases, liver ailments, dentistry
200.	Struthium (soap-root)	<i>Gypsophila struthium</i> (Caryophyllaceae)	2	2	0		Insanity, skin diseases, induces sneezing as well as miscarriage, diuretic and purging substance
201.	Sugar cane	<i>Saccharum officinarum</i> (Poaceae)	41	11	30	Wind and colic, cleans and treats the teeth, urinary complaints, hallucination, liver, fever, cough, swelling, weakness of the eyesight,	Eye diseases, colic and coughs, purgative

Table 17 (cont.)

No.	Common name	Scientific name And botanical family	T	L	P	Practical medicinal uses	Theoretical medicinal uses (selective)
202.	Sumac	<i>Rhus coriaria</i> (Anacardiaceae)	1	1	0	migraine, invalid diet, aphrodisiac	Eye diseases, dentistry, abortsthe fetus, treats sore throats, prevents diarrhoea
203.	Sweet basil	<i>Ocimum basilicum</i> var. <i>pilosum</i> (Lamiaceae)	1	0	1		Eye diseases, heart ailments, hemorrhoids and nasal obstructions
204.	Sweet clover (white melilot)	<i>Melilotus albus</i> (Fabaceae)	1	0	1	Eye diseases	Skin diseases, diseases affecting the legs and nails, sciatica, varicose veins, inflammatory swellings, aphrodisiac
205.	Sweet marjoram	<i>Origanum majorana</i> (Lamiaceae)	4	3	1		Eye diseases, fevers, gynecological ailments, kidney and urinary tract disorders
206.	Sweet violet	<i>Viola odorata</i> (Violaceae)	15	2	13	Hallucination medical diet, treats the face, eye diseases, aphrodisiac	Eye diseases, headache stomach ache, bites of scorpions and reptiles, diarrhoea, abdominal pains, dysuria, fevers, palpitation, sciatica, varicose veins, cancer, erysipelas, inflammatory swellings, elephantiasis
207.	Tamarind	<i>Tamarindus indica</i> (Fabaceae)	14	8	6	Fevers, cough, aphrodisiac	Purgative, fevers

Table 17 (cont.)

No.	Common name	Scientific name And botanical family	T	L	P	Practical medicinal uses	Theoretical medicinal uses (selective)
208.	Tamarisk	<i>Tamarix gallica</i> , <i>T. orientalis</i> (Tamaricaceae)	4	0	4		Dentistry, wounds, emmenagogues, abortifacients
209.	Tar	Made of resins of pines, cedars and cypress	2	0	2		Eye diseases, dentistry, emmenagogues, abortifacients
210.	Thyme	<i>Teucrium capitatum</i> (Lamiaceae)	2	2	0		Eye diseases, stomach ailments, colic
211.	Tragacanth	<i>Astragalus gummifer</i> (Fabaceae)	14	5	9	Weakness of the eyesight migraine, cough, eye diseases, cleans and treats the teeth, wind and colic, purgative, lincti and ointments	Dentistry, skin and eye diseases, inflammations
212.	Tumeric	<i>Curcuma longa</i> (Zingiberaceae)	7	5	2	Eye diseases	Eye and skin diseases, dentistry
213.	Turpeth (turbith, Indian jalap)	<i>Ipomoea turpethum</i> (Convolvulaceae)	18	7	11	Treats the face, eye diseases, itches, cleans and treats the teeth, purgative	Purgative, eye diseases
214.	Wallflower	<i>Erysimum cheiri</i> (= <i>Cheiranthus chiri</i> ) (Brassicaceae)	1	0	1		Dentistry, regimen of health, poison, accelerates menstruation, expels the placenta
215.	Walnuts	<i>Juglans regia</i> (Juglandaceae)	14	9	5	Cleans and treats the teeth, dressing bites, aphrodisiac	Theriac, sex, kidney disease, hemorrhoids, stomach and liver ailments, cough
216.	Watermelon	<i>Citrullus lanatus</i> (Cucurbitaceae)	7	3	4	Treatment of the face and the eye, urinary complaints, medical diet	Skin diseases, fevers, kidney ailments, jaundice

Table 17 (cont.)

No.	Common name	Scientific name And botanical family	T	L	P	Practical medicinal uses	Theoretical medicinal uses (selective)
217.	Wheat	<i>Triticum sp.</i> (Poaceae)	3	1	2	Treatment of the face, eye diseases	Skin and eye diseases, inflammatory swellings
218.	White-behen	<i>Centaurea behen</i> (Asteraceae)	1	0	1		Heart ailments, palpitation, theriac, purgative, increases weight, improves sperm quality
219.	Wild marjoram	<i>Origanum syriaca</i> (Lamiaceae)	6	2	4	Fever, diet	Fevers, dentistry
220.	Wild nard (asarun, asarabacca)	<i>Asarum europaeum</i> (Aristolochiaceae)	3	0	3	Cough	Fevers, headaches and diseases of the brain, jaundice, thirst, stomach and liver pain, strengthens breathing
221.	Wild rue	<i>Peganum harmala</i> (Zygophyllaceae)	3	1	2		Emetic, aphrodisiac, diuretic, intestinal diseases, hemorrhoids, and diseases of nerves, insanity, epilepsy, hemorrhoids, baldness
222.	Willow (GN)	<i>Salix sp.</i> (Salicaceae)	1	0	1		Eye diseases, fever, colic, stomachache
223.	Wormwood	<i>Artemisia sp.</i> ( <i>absinthium, sieberi, judaica, arborescens</i> ) (Asteraceae)	6	2	4		Stomach ailments, poisoning, bubo, scrofula
224.	Yew	<i>Taxus baccata</i> (Taxaceae)	2	1	1		Heart problems and depression



APPENDIX TWO

THEORETICAL *MATERIA MEDICA*

The data presented in this appendix are the theoretical medicinal substances mentioned in fragments that were identified as parts of medical and pharmacological books revealed in the Genizah so far. Hundreds of Genizah fragments, identified only lately as such, have still not been transcribed, so this list is incomplete and the class marks presented are selective.

The identification process of some of the substances was lengthy and extremely complicated (on the identification process and literature used see part A, Chapter 3).

The data are arranged according to the origin of the medicinal substances, namely of animal, inorganic, and plant origin. The items are in the alphabetical order of the English common names.

Table 18 Animals

No.	English N.	Arabic N.	Scientific N.	Class marks	Comments
1	Bear	dubb	<i>Ursus arctos syriacus</i>	T-S Ar.40.166	Bile
2	Beetle	khunfasā'		T-S Ar.43.70 (QM)	
3	Camel	jamal	<i>Camelus dromedarius</i>	T-S Ar.44.153	
4	Carp	shabbūt	<i>Barbus grypus</i>	T-S Ar.41.75; T-S Ar.44.193	Egg, bile
5	Civet	zabād	<i>Civettictis civetta</i>	T-S Ar.45.26; T-S Ar.39.382; T-S Ar.41.118; T-S Ar.42.44; T-S Ar.42.151; T-S Ar.44.77; T-S Ar.44.91; T-S Ar.44.129	
6	Crow	ghurāb	<i>Corvus sp.</i>	T-S Ar.41.90	Gall
7	Deer	'iyyal	<i>Cervidae sp.</i>	T-S Ar.42.5; T-S Ar.44.205; T-S NS 222.70	Horns

Table 18 (cont.)

No.	English N.	Arabic N.	Scientific N.	Class marks	Comments
8	Duck	baṭṭ	<i>Anas sp.</i>	T-S Ar.40.11; T-S Ar.41.128; T-S NS 222.68; T-S NS 222.70; T-S NS 306.30	Fat
9	Eagle	'uqāb	<i>Aquila sp.</i>	T-S Ar.38.9; T-S Ar.44.193	Bile
11	Elephant	fil	<i>Loxodonta africana</i> or <i>Elephas indicus</i>	T-S Ar.40.5; T-S Ar.40.10	Bile, gall
12	Francolin	durrāj	<i>Francolinus francolinus</i>	T-S Ar.41.134	
13	Frog	ḍafda'		T-S Ar.43.70 (QM); T-S Ar.44.77; T-S NS 222.70	
14	Goose	'iwazz	<i>Anser sp.</i>	T-S NS 90.28; 15T-S NS 306.30; T-S Ar.44.147; T-S Ar.43.70	
15	Hedgehog	qunfudh	<i>Hemiechinus auritus aegyptius</i>	T-S Ar.45.51; T-S Ar.44.209	
16	Human	'insān (zibl, ribl, bawl, lu'āb)	<i>Homo sapiens</i>	T-S Ar.42.151; T-S AS 177.343	Feces, fat, urine, fat, saliva
17	Hyena	ḍab'	<i>Hyaena hyaena</i>	T-S Ar.43.166; T-S Ar.41.90	Bile
18	Lard	shḥam al-khinzīr	<i>Sus scrofa</i>	T-S AS 180.231	
19	Leech	'alaq	<i>Hirundu medicinalis</i>	T-S K14.48	
20	Lion	asad	<i>Panthera leo</i>	T-S Ar.40.104	Bile
21	Medical Skink	sqaṅqūr, 'isqaṅqūr	<i>Scincus scincus</i>	T-S Ar.41.66; T-S Ar.41.75; T-S Ar.45.33	
22	Mosquito/flea	burghūth	Nematocera/ Siphonaptera	T-S Ar.41.133	
23	Nile Crocodile	timsāḥ	<i>Crocodylus niloticus</i>	T-S Ar.43.80	
24	Ostrich	na'āma	<i>Struthio camelus</i>	T-S Ar.43.231; T-S NS 297.114	Egg
25	Ox gall	baqar		T-S Ar.41.90; T-S Ar.40.5	
26	Partridge	ḥajal; qabaj	<i>Perdix sp. or Alectoris sp.</i>	T-S Ar.43.155; T-S Ar.44.76; T-S Ar.44.129 T-S Ar.44.193; T-S Ar.45.45	Bile

Table 18 (cont.)

No.	English N.	Arabic N.	Scientific N.	Class marks	Comments
27	Pigeon	ḥamāma	<i>Columba livia</i>	T-S Ar.40.133	
28	Rhinoceros	karkaddān	<i>Ceratotherium simum</i>	T-S Ar.41.45; T-S Ar.40.90; T-S Ar.41.90; T-S Ar.40.5	Fat
29	Scolopendre	'asqulūfandria	Scolopendra	T-S Ar.39.369; T-S Ar.39.351	
30	Sea Sponge	'isfanja	<i>Spongia officinalis</i>	T-S Ar.39.95; T-S Ar.41.24; T-S Ar.43.265; AS 183.312	Body
31	Seashell	ṣadaf, wada'a	Bivalvia	T-S Ar.39.183 (QM), T-S NS 327.21; T-S NS 222.22; T-S Or. 1080.3.39	LE
32	Sheep	kharūf; ḥamal; ḍa'n	<i>Ovis aries</i>	T-S A.42.167; T-S Ar.43.43; T-S Ar.43.76; T-S Ar.43.155; T-S Ar.44.76; T-S Ar.44.86; T-S Ar.44.79; T-S Ar.44.218; T-S Ar.44.86	Liver, meat
33	Spider	'ankabūt	Araneae (Galeodes sp.)	T-S Ar.43.70 (QM)	
34	Stag	ghazāl	<i>Gazella sp.</i>	T-S AS 181.271	Fat
35	Swallow	khuṭṭāf	<i>Hirundo sp.</i>	T-S Ar.41.40; T-S Ar.43.166	
36	Torpedo-fish	ra'ād	<i>Torpedo torpedo</i>	T-S Ar.42.167	
37	Turtle	sulaḥfā	<i>Testudo sp.</i>	T-S Ar.41.116; T-S Ar.43.114; T-S Or.1080.3.9	Blood, meat
38	Urine	bawl	<i>Different animals</i>	T-S Ar.44.153; T-S Ar.45.19; T-S NS 90.46; T-S NS 222.59	
39	Wolf	dhi'b	<i>Canis lupus</i>	T-S Ar.43.80; T-S Ar.40.104; T-S Ar.41.90; T-S Ar.44.153	

Table 19 Inorganics

No.	English N.	Arabic N.	Scientific N.	Classmarks
1	Burnet copper	rūsakhtaj	Cu <sub>2</sub> O	T-S Ar.40.121
2	Crude oil (Kerosene)	naft		T-S Ar.45.30; T-S Ar.43.312; T-S NS 90.46
3	Crystal	ballūr		T-S Ar.43.114
4	Emerald	zarward 'irāqī		T-S Ar.39.307
5	Hyacinth	yāqūt		T-S Ar.43.145; T-S AS 180.210; T-S Or.1080.14.6
6	Indian salt	milḥ hindī		T-S Ar.41.90; T-S Ar.40.5
7	Jew's stone	ḥajar al-yahūdī	<i>Cidaris sp.</i>	T-S Ar.40.133
8	Lime	nūra		T-S Ar.39.95; T-S NS 31.6; T-S Or.14.6
9	Lead peroxide	murdāsanj	Pbo	T-S Ar.40.64; T-S Ar.11.31; T-S Ar.11.30; T-S Ar.43.98; T-S Ar.44.77; T-S Ar.43.231; T-S Ar.45.20; T-S AS 179.235; T-S NS 222.66; T-S NS 222.67; T-S NS 222.68; T-S NS 222.70
10	Pomis	zabad al-baḥr		T-S NS 306.73
11	Tartaric acid	ṭarṭar		T-S NS 90.64; T-S 12NS 163.94

Table 20 Plants

No.	English N.	Arabic N.	Scientific N.	Classmarks
1.	Alecost	quṣṭ	<i>Aucklandia costus</i>	T-S Or.1081.1.6
2.	Alkekengi (Winter cherry)	kākanj	<i>Physalis alkekenge</i>	T-S Ar.40.85; T-S Ar.40.104; T-S Ar.39.124; T-S AS 179.329; T-S Or.1080.2.74; T-S Ar.45.33; T-S NS 305.116
3.	Anacardium (marking-nut tree, marsh-nut)	balādthur	<i>Semecarpus anacardium</i>	T-S Ar.45.28; T-S Ar.43.155; T-S Ar.44.77; T-S Ar.44.204; T-S Ar.44.187; T-S AS 180.16; T-S NS 90.61; T-S AS 180.16; T-S AS 181.108
4.	Artichoke	khurshuf	<i>Cynara scolymus</i>	T-S Ar.40.194; T-S Ar.39.369; T-S Ar.44.129
5.	Bearded rye-grass	shaylam	<i>Lolium temulentum</i>	T-S AS 177.318
6.	Bermuda grass	thil	<i>Cynodom dactylon</i>	T-S Or.1081.1.21

Table 20 (cont.)

No.	English N.	Arabic N.	Scientific N.	Classmarks
7.	Bird-rape	shaljam; lift	<i>Brassica campestre</i>	T-S Ar.39.208; T-S Ar.42.73; T-S Ar.44.76; T-S Ar.44.77; T-S Ar.44.79; T-S Ar.44.204; T-S AS 177.51
8.	Black poplar	kahrabā'	<i>Populus nigra</i>	T-S AS 160.375; T-S Ar.40.91; T-S Ar.43.98; T-S Ar.43.132; T-S Ar.43.138; T-S Ar.44.91; T-S Ar.44.148; T-S Ar.44.149; T-S Ar.44.204; T-S Or.1080.3.39
9.	Brazilwood	baqqam	<i>Caesalpina sappan</i>	T-S NS 90.44; T-S Ar.41.133
10.	Bryony (white)	fāsharashtīn	<i>Bryonia alba</i>	T-S Ar.41.90; T-S Ar.40.5
11.	Chaksh	jashamarnaj	<i>Cassia absus</i>	T-S Ar.42.68
12.	Chestnut	shāh ballūṭ	<i>Castanea sativa</i>	T-S Ar.40.179
13.	Cocculus indicus	māhī zahra	<i>Anamirta cocculus</i>	T-S Ar.41.130
14.	Common Ivy	lablāb	<i>Hedera helix</i> or <i>Convolvulus arvensis</i>	T-S Ar.11.23; T-S Ar.39.161; T-S Ar.40.104; T-S Ar.42.104; T-S Ar.44.91; T-S Ar.45.45; T-S Ar.44.57; T-S Ar.44.204; T-S NS 222.20; T-S AS 184.3; T-S NS 297.39; T-S AS 179.92; T-S AS 184.3; T-S Ar.11.23
15.	Cowpea	lūbiyā	<i>Vigna sinensis</i> or <i>V. nilotica</i>	T-S Ar.41.96; T-S Ar.42.73; T-S Ar.44.76; T-S AS 182.102; T-S NS 306.172
16.	Dandelion	ṭarakhashqūn	<i>Taraxacum officinale</i>	T-S Ar.39.161; T-S NS 297.114
17.	Dittany	mashkaṭarāmshīr	<i>Origanum sp.</i>	T-S Ar.39.369
18.	Dog wood	mū	<i>Cornus mas</i>	T-S Ar.44.204
19.	Drias plant	thāfsiyā	<i>Thapsia garganica</i>	T-S Ar.40.11; T-S AS 181.83
20.	Duck weed	ṭuḥlub	<i>Lemna minor</i>	T-S Or.1080.2.74
21.	Dwarf elder	yadhquh	<i>Samabucus ebulus</i>	T-S Ar.42.115
22.	Eastern strawberry-tree	qaṭlab; qātil abīhi	<i>Arbutus andrachne</i>	T-S Ar.40.5; T-S Ar.41.90; T-S Ar.45.14
23.	Egyptian millet	dhura	<i>Sorghum vulgare</i>	T-S Ar.45.45
24.	Embelia	barnāj	<i>Embelia ribes</i>	T-S Ar.44.187; T-S Ar.41.133; T-S Ar.43.98; T-S Or.1080.13.34; T-S Ar.41.90; T-S Ar.40.5; T-S Or.1081.1.6
25.	False cumin [Common wild cumin]	qardamānā; qurunbād	<i>Lagoecia cuminoides</i>	T-S Ar.43.191; T-S Ar.44.204; T-S Ar.45.19

Table 20 (cont.)

No.	English N.	Arabic N.	Scientific N.	Classmarks
26.	Fleabane	rabal	<i>Pulicaria incise</i>	T-S Ar.39.228
27.	Gentian	jantiyānā	<i>Gentiana sp.</i>	T-S Ar.40.157; T-S Ar.40.60; (T-S NS 306.54
28.	Grape ivy	ḥamāmā	<i>Cissus vitiginea</i>	T-S Ar.41.90; T-S Ar.40.5; T-S Or.1081.1.6
29.	Celery ?	yakhmadh	<i>Apium sp.</i>	T-S Ar.42.115
30.	Ground-pine	kamāfiṭūs	<i>Ajuga chamaepitus</i>	T-S Ar.45.28; T-S Ar.40.60; T-S Ar.40.104
31.	Guinea pepper	harnuwa	<i>Capsicum minimum</i>	T-S Ar.41.29; T-S Ar.43.265
32.	Hart's-tongue	ʾisqūlūfandriyūn	<i>Scolopendrium vulgare</i>	T-S Ar.43.98; T-S Ar.44.204; T-S Ar.44.209; T-S NS 222.69; T-S Or.1080.3.39
33.	Hawthorn	zaʾrūr	<i>Crataegus sp.</i>	T-S Ar.41.123; T-S Ar.44.204; T-S Ar.44.218
34.	Immortelle	nukhāla	<i>Paronychia Arabica</i>	T-S Ar.44.91; T-S Ar.44.208
35.	Indian aconite, bish	bish	<i>Aconitum ferox</i>	T-S Ar.42.151; T-S Ar.44.139; T-S Ar.44.153; T-S NS 306.94
36.	Indian laurel	sādhaj hindī	<i>Laurus malabathrum</i>	T-S Ar.40.5; T-S Or.1081.1.6
37.	Knot-grass	barshiyān dārū	<i>Polygonum aviculare</i>	T-S A.44.218
38.	Knotweed	ʾaṣā al-rāʾī	<i>Polygonum sp.</i>	T-S Ar.43.138; T-S Ar.44.91; T-S Ar.44.130; T-S Ar.44.204; T-S Ar.44.218; T-S Ar.45.13; T-S NS 306.94
39.	Larkspur	zarīr	<i>Delphinium saniculaefolium</i>	T-S Ar.42.151
40.	Lemongrass	qaṣab al-dharīra	<i>Cymbopogon martini</i>	T-S Or.1081.1.6
41.	Lethraea	ḥalāwa	<i>Lethraea quinquifida</i>	T-S Ar.43.95
42.	Lily (sky colored)	sawsan al-samānjūnī	<i>Lilium candidum or Iris florentina</i>	T-S Or.1081.1.6
43.	Lupine	turmus	<i>Lupinus albus</i>	T-S Ar.39.20; T-S NS 327.90; T-S Ar.43.98; T-S NS 90.71; T-S Ar.45.49; T-S Ar.39.468; T-S Ar.44.76; T-S AS 181.83; T-S Ar.41.90; T-S NS 305.107; T-S Ar.41.90
44.	Mallow	khubayza	<i>Malva sp.</i>	T-S Ar.40.91
45.	Marrow	qarʾa	<i>Cucurbita moschata</i>	T-S Ar.35.89; T-S AS 176.277; T-S AS 180.209, 208; T-S AS 162.185-186
46.	Mesquite	yanbūt	<i>Prosopis farcta</i>	T-S Ar.45.14

Table 20 (cont.)

No.	English N.	Arabic N.	Scientific N.	Classmarks
47.	Mezereon	māzaryūn	<i>Daphne mezereum</i>	T-S AS 160.197; T-S AS 182.9; T-S Ar.42.39; T-S Ar.40.60; T-S Ar.41.37; T-S NS 297.39
48.	Millet [Broomcom millet]	daḥn	<i>Panicum milliaceum</i>	T-S AS 184.152
49.	Narcissus	narjis	<i>Narcissus sp.</i> ( <i>poeticus</i> )	T-S NS 224.181; T-S AS 160.197; T-S Ar.40.68; T-S Ar.40.162; T-S Ar.43.88; T-S Ar.42.44; T-S Ar.45.49; T-S Ar.45.31
50.	Nightshade	ʿanab al-thaʿlab, ʿanab al-dhiʿb	<i>Solanum nigrum</i>	T-S NS 90.73; T-S Ar.11.7; T-S Ar.39.124; T-S Ar.44.91; T-S Ar.45.45; T-S NS 90.71; T-S NS 90.80; T-S AS 176.409; T-S Ar.39.228; T-S Ar.43.166; T-S Ar.43.231; T-S NS 90.60; T-S Ar.45.13; T-S AS 179.329; T-S Ar.40.60; T-S Or.1080.2.74; T-S Ar.40.112; T-S NS 164.152; T-S NS 222.58; T-S NS 222.67; T-S NS 222.68; T-S NS 222.70; T-S Or.1080.13.34
51.	Nux-vomica	jawz al-qayʿ	<i>Strychnos nux-vomica</i>	T-S AS 184.152
52.	Oak	barnīs	<i>Quercus sp.</i>	T-S Ar.41.133
53.	Oleander	Diflā	<i>Nerium oleander</i>	T-S Ar.45.51; T-S Ar.43.43; T-S Ar.44.77
54.	Parsley	faṭrāsālyūn, baṭrāsālyūn	<i>Petroselinum sativum</i>	T-S Ar.42.199; T-S Ar.42.68; T-S Ar.43.98; T-S Ar.42.115; T-S NS 222.25; T-S NS 222.69; T-S NS 306.54; T-S NS 297.114
55.	Peach	khawkh	<i>Prunus persica</i>	T-S Ar.38.67; T-S Ar.42.151; T-S Ar.43.225; T-S Ar.44.60; T-S AS 180.201; T-S NS 222.67
56.	Psyllium	lisān al-ḥamal	<i>Plantago sp.</i>	T-S Ar.39.369; T-S Ar.39.351; T-S Ar.40.130
57.	Ramie	rāmik	<i>Boehmeria nivea</i>	T-S NS 164.62
58.	Rice	ʿaruzz	<i>Oryza sativa</i>	T-S Ar.41.96; T-S Ar.40.194; T-S Ar.41.90; T-S Ar.40.5
59.	Rush-nut, earth almonds	ḥabb al-zalam	<i>Cyperus esculentus</i>	T-S Ar.41.66

Table 20 (cont.)

No.	English N.	Arabic N.	Scientific N.	Classmarks
60.	Screw pine	kādhī	<i>Pandanus odoratissimus</i>	T-S Ar.40.91
61.	Service tree	ghubayrā	<i>Sorbus sp.</i>	T-S AS 179.47
62.	Sesban	sisbān	<i>Sesamum egyptiacum</i>	T-S Ar.41.130
63.	Seseli (Moon carrot)	sāsaliyūs	<i>Seseli tortuosum</i>	T-S AS 179.329; T-S Or.1081.1.6
64.	Shrubby saltbush	qaṭaf, sarmaq	<i>Atriplex sp.</i>	T-S Ar.44.76; T-S Ar.44.57
65.	Small caltrops	ḥasak,	<i>Tribulus terrestris</i>	T-S Ar.40.90; T-S Ar.44.130; T-S Ar.45.45; T-S Ar.41.30; T-S Ar.41.75; T-S Ar.41.116
66.	Sneezewort	sa'ūṭ	<i>Achillea ptermica</i>	T-S Ar.42.68; T-S Ar.43.180; T-S Ar.44.193; T-S Ar.45.41; T-S Ar.45.49
67.	Sour orange	nāranj	<i>Citrus aurantium</i>	T-S Ar.39.369
68.	St. John's-wort	hiyū fāriqūn	<i>Hypericum sp.</i>	T-S NS 222.25; T-S NS 222.70
69.	Storax (Sweet gum, Styrax Oriental)	may'a	<i>Liquidambar orientalis</i>	T-S NS 37.35; T-S NS 163.25; T-S AS 163.9; T-S Ar.39.351; T-S Ar. 40.162; T-S AS 179.302; T-S Misc 25.133; T-S S J.21,f.29; T-S 8 J.19,f.26
70.	Swallow-wort	'urūq al-ṣufr, 'urūq al-ṣabbāghīn	<i>Chelidonium majus</i>	T-S Ar.43.166; T-S Ar.43.201; T-S Ar.45.41; T-S AS 182.77
71.	Sweet lime	'utrujj	<i>Citrus medica</i>	T-S Ar.38.68; T-S Ar.38.78; T-S Ar.40.1; T-S Ar.40.91; T-S Ar.40.112; T-S Ar.41.47; T-S Ar.41.115; T-S Ar.41.123; T-S Ar.42.167; T-S Ar.44.51; T-S Ar.44.76; T-S Ar.44.79; T-S Ar.44.101; T-S Ar.44.130; T-S Ar.44.148; T-S Ar.44.149; T-S Ar.44.204; T-S Ar.44.208; T-S Ar.45.19; T-S NS 90.66; T-S NS 222.41; T-S NS 305.58
72.	Sycamore	jummayz	<i>Ficus sycomorus</i>	T-S Ar.44.51
73.	Taro	qulqās	<i>Colocasia antiquorum</i>	T-S NS 297.11
74.	Teak	nushārat al-sāj	<i>Tectona grandis</i>	T-S Ar.45.49
75.	Thickened julep	julāb ma'qūd	<i>Rosa sp.</i>	T-S Ar.40.91
76.	Toothbrush tree	'arāk; barīr	<i>Salvadora persica</i>	T-S Ar.41.33
77.	Tortuosom	al-karāfs al-jabalī	<i>Seseli tortuosum</i>	T-S AS 179.329



Table 20 (cont.)

No.	English N.	Arabic N.	Scientific N.	Classmarks
78.	Valerian	fū	<i>Valeriana sp.</i>	T-S Ar.42.22; T-S NS 90.39
79.	Vervain	barbīna	<i>Verbena sp.</i>	T-S Ar.41.133
80.	Visnaga	nānkhuwāh	<i>Ammi visnaga</i>	T-S Or.1081.1.6
81.	Warras	wars	<i>Flemingia rhodocarpa</i> = <i>Moghonia grahamiana</i>	T-S Ar.45.14; T-S Or. 1080. 13.33
82.	Water cress	filfil al-ṣaqālība	<i>Nasturium officinale</i>	T-S Ar.41.44
83.	Water cress	rijl al-ghurāb	<i>Coronopus squamatus</i>	T-S NS 224.146
84.	Wild-ginger, broad-leaved ginger, zerumbet	zarunbād	<i>zingiber zerumbet</i>	T-S Ar.39.307; T-S Ar.42.199; T-S Ar.40.5; T-S Ar.41.66; T-S Ar.43.98; T-S Ar.44.149; T-S Ar.42.151; T-S Ar.44.204; T-S Or.1080.3.39; T-S Or.1080.13.33; T-S Ar.41.90; T-S Ar.40.5
85.	Woundwort	sandarīṭas	<i>Stachys recta</i>	T-S Ar.39.51; T-S Ar.41.38
86.	Zedoary	zadwār	<i>Curcuma zedoaria</i>	T-S Ar.42.151; T-S Ar.39.351; T-S Ar.42.151

## APPENDIX THREE

### COMPOUND MEDICINES AND DRUGS

This appendix presents some of the wide variety of compound drugs (medications) used by the medieval people of the Eastern Mediterranean, as mentioned in Genizah fragments. The drugs' names, their descriptions, and the methods of their preparation are presented, as well as selective class marks in which they are mentioned, without distinction between practical and theoretical information. However, most of the information comes from medical and pharmacological literature, and therefore is theoretical.

Like all most of the original information furnished in this book, this appendix relies mainly on the collection of Genizah fragments in Cambridge University Library. A few other names of compound medicines appear in Genizah documents of other collections, such as the laxative remedy *iṣṭumaḥiqūn* (Heidelberg Ar.pap.912)<sup>1</sup> and the anaesthetic remedy *ifnakhanūn* (Heidelberg Ar.pap.912).<sup>2</sup>

Identification of some of the compound drugs was highly elaborate, and various dictionaries were used.<sup>3</sup> (On the identification process and literature used see part A, Chapter 3.)

#### *'Infiḥa*

Description:

Medical liquid perfumes.

Mentioned in (Main Genizah classmarks):

T-S Ar.41.115; T-S Ar.44.77; T-S NS 327.55.

#### *'Atrīfal, iṭrīful*

Description:

Compound laxative medicine.

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<sup>1</sup> Gil, Kingdom, II, pp. 675–677 no. 231, Dietrich, Egypt.

<sup>2</sup> Ibid.

<sup>3</sup> Dozy; Hava.

Mentioned in (Main Genizah classmarks):

T-S Ar.39.65; T-S Ar.40.111; T-S Ar.41.78; T-S 42.64; T-S Ar.42.190;  
T-S Ar.43.95; T-S Ar.43.270; T-S Ar.44.13; T-S Ar.44.121; T-S Ar.45.26;  
T-S Ar.45.28; T-S NS 164.62.

### *Bakhūr*

Description:

Incense, used in traditional medicine until present day.

Mentioned in (Main Genizah classmarks):

Yemen incense was mentioned in a list of *materia medica* (T-S Ar.30.274).  
Appeared in a chapter on perfumery and incense in a quasi-medical  
document (T-S Ar.43.95).

### *Dharūrāt*

Description:

General name for powdered medicines.

Mentioned in (Main Genizah classmarks):

T-S Ar.39.367; T-S Ar.41.24; T-S Ar.44.13; T-S Ar.44.150; T-S Ar.45.20;  
T-S Ar.45.32; T-S NS 297.17; T-S NS 297.232.

### *Dawā', 'adwiya*

Description:

General name for drugs, medications.

Mentioned in (Main Genizah classmarks):

T-S Ar.43.143; T-S Ar.43.144; T-S Ar.43.151; T-S Ar.43.173; T-S  
Ar.43.263; T-S Ar.43.265; T-S Ar.43.328; T-S Ar.44.51; T-S Ar.44.93; T-S  
Ar.44.130; T-S Ar.44.139; T-S Ar.44.147; T-S Ar.44.148; T-S Ar.44.149;  
T-S Ar.44.150; T-S Ar.48.170; T-S Ar.44.181; T-S Ar.44.205; T-S Ar.45.20;  
T-S Ar.45.22; T-S Ar.45.31; 45.41; T-S AS 176.266; T-S AS 176.402; T-S  
AS 176.403; T-S AS 177.291; T-S AS 177.540; T-S AS 179.60; T-S AS  
179.221; T-S AS 180.163; T-S AS 181.13; T-S AS 181.83; T-S AS 183.144;  
T-S AS 183.197; T-S AS 184.285; T-S AS 184.375; T-S AS 184.376; T-S  
NS 90.15; T-S NS 90.30; T-S NS 90.52; T-S NS 90.55; T-S NS 90.56; T-S  
NS 90.59; T-S NS 90.60; T-S NS 90.61; T-S NS 90.62; T-S NS 90.66;  
T-S NS 222.18; T-S NS 222.31; T-S NS 222.74; T-S Or.1080.1.72; T-S Or.  
1080.2.70; T-S Or.1080.13.12; T-S Or.1080.13.33.

*Duhn, 'adhān*

## Description:

Oil usually made from seeds of different plants, or animal fat; often used for medicine.

Mentioned in (Main Genizah classmarks):

T-S Ar.39.381; T-S Ar.40.49; T-S Ar.40.112; T-S Ar.41.118; T-S Ar.42.22; T-S Ar.43.88; T-S Ar.43.191; T-S Ar.44.13; T-S Ar.44.77; T-S Ar.44.130; T-S Ar.44.152; T-S Ar.44.215; T-S Ar.45.33; T-S Ar.45.41; T-S AS 177.540; T-S AS 179.134; T-S NS 222.28; T-S NS 224.145; T-S NS 305.107; T-S NS 306.4; T-S NS 306.45; T-S NS 306.54; T-S NS 306.172.

*Ghāliya*

## Description:

General name for fragrant and sometimes medical compounds made out of ingredients such as ambergris, nutmeg, etc. In the late Islamic period this word served also as a name for perfume made out of African Zebed. According to a merchant's letter from the 11th century, was imported into Egypt from the Maghrib (T-S 13; J.23.6).

Mentioned in (Main Genizah classmarks):

T-S Ar.41.47; T-S Ar.42.167; T-S Ar.44.79.

*Gharghara*

## Description:

Gargling medical liquid.

Mentioned in (Main Genizah classmarks):

T-S Ar.42.44; T-S Ar.43.180; T-S Ar.45.51.

*'Iyāraj*

## Description:

Medicinal cream.

Mentioned in (Main Genizah classmarks):

T-S Ar.11.18; T-S Ar.11.31; T-S Ar.38.15; T-S Ar.38.67; Ar.39.458; T-S Ar.40.111; T-S Ar.41.4; T-S Ar.41.12; T-S Ar.41.30; T-S Ar.41.72; T-S Ar.41.78; T-S Ar.42.22; T-S Ar.42.189; T-S Ar.43.98; T-S Ar.43.142; T-S Ar.43.154; T-S Ar.43.155; T-S Ar.43.166; T-S Ar.43.201; T-S Ar.43.206; T-S Ar.43.252; T-S Ar.43.270; T-S Ar.44.102; T-S Ar.44.130; T-S

Ar.44.147; T-S Ar.44.150; T-S Ar.44.193; T-S Ar.45.26; T-S Ar.45.33; T-S Ar.45.45; T-S Ar.45.49; T-S AS 178.288; T-S NS 90.71; T-S NS 90.76; T-S NS 90.80; T-S NS 164.88; T-S NS 297.89; T-S NS 306.54; T-S NS 327.93; T-S Or.1081.J.39.

*Jawārish, jawārishn*

Description:

General name for compound medicines which consisted of several ingredients including sugar or honey. Stomachics, usually the single main ingredient, cooked over a fire with water, rose water or extracted juice of mint with the sweetening agent sugar or honey dissolved in it over the fire. The liquid is seasoned with a variety of spices from clove flowers, mastic, cinnamon, and musk to red or white sandalwood. Taken before the meal to shrink the stomach, and increase the general sense of well-being.<sup>4</sup>

Mentioned in (Main Genizah classmarks):

T-S Ar.40.51; T-S Ar.40.90; T-S Ar.40.112; T-S Ar.41.78; T-S Ar.42.90; T-S Ar.43.270; T-S Ar.44.121; T-S Ar.41.187; T-S Ar.45.26; T-S Ar.45.33; T-S Ar.45.45; T-S AS 180.15; T-S NS 90.52; T-S NS 90.61; T-S NS 224.226; T-S Or.1081.1.6.

*Jullāb*

Description:

General name of refined and fragrant liquid and specific name for rose water or sweets mixed with rose water.

Mentioned in (Main Genizah classmarks):

T-S Ar.39.461; T-S Ar.41.123; T-S Ar.42.73; T-S Ar.42.199; T-S Ar.44.32; T-S Ar.44.57; T-S Ar.44.77; T-S Ar.44.90; T-S Ar.44.201; T-S Ar.45.33; T-S AS 181.35; T-S NS 90.51; T-S NS 90.74; T-S NS 90.76; T-S NS 164.12; T-S NS 222.27; T-S NS 297.30; T-S NS 297.56.

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<sup>4</sup> Waines.

*Kuḥl*

## Description:

Kohl is a general name for a compound for eye diseases as well as cosmetics and make-up.<sup>5</sup> It was used extensively during the medieval period and still exists in the Middle East to the present day, mainly among the users of traditional medicine. The same name described, and still describes, other inorganic materials which are used mainly for the treatment of eye diseases as well as for make-up: galena (PbS) and stibium (Sb).

Mentioned in (Main Genizah classmarks):

T-S Ar.39.228; T-S Ar.39.273; T-S Ar.40.45; T-S Ar.43.80; T-S Ar.44.93; T-S Ar.44.218; T-S Ar.45.41; T-S AS 179.59; T-S AS 179.137; T-S NS 90.37; T-S NS 222.59; T-S NS 327.93; T-S Or.1080.13.34.

*La'ūq*

## Description:

Medication or food, taken in small doses chewed or sucked.

Mentioned in (Main Genizah classmarks):

T-S Ar.11.13; T-S Ar.39.91; T-S Ar.42.199; T-S Ar.43.270; T-S Ar.44.86; T-S Ar.45.19; T-S Ar.45.28; T-S Ar.45.33; T-S NS 34.16; T-S NS 90.27.

*Māni' al-ḥabl*

## Description:

Contraceptive.

Mentioned in:

T-S AS 169.150.

*Ma'jūn*

## Description:

General name for medical cream, spread, paste, or ointment. Electuaries, usually the single main ingredient is cooked over a fire with honey or sugar until the pasty consistency of electuary is achieved. Spices may also be added for the flavour. The dosage is a walnut-size mouthful usually taken with or after the meal. Different electuaries were intended to

<sup>5</sup> *EI*, V, p. 356.

produce different effects: to fortify sexual desire, increase the semen, stimulate appetite, digestion, and flow of urine, warm the kidneys, treat dropsy, suppress vomiting, and stimulate the menstrual blood.<sup>6</sup>

Mentioned in (Main Genizah classmarks):

T-S Ar.38.9; T-S Ar.38.68; T-S Ar.39.472; T-S Ar.40.85; T-S Ar.40.112; T-S Ar.41.40; T-S Ar.41.96; T-S Ar.41.114; T-S Ar.41.115; T-S Ar.42.22; T-S Ar.42.35; T-S Ar.42.199; T-S Ar.43.43; T-S Ar.43.95; T-S Ar.43.270; T-S Ar.43.338; T-S Ar.44.77; T-S AS 166.124; T-S AS 182.37; T-S NS 222.25; T-S NS 222.31; T-S NS 222.58; T-S NS 222.59; T-S NS 327.70; T-S Or.1080.1.72; T-S Or.1080.13.34.

### *Marham, marāhim*

Description:

General name for ointments used for medicine or cosmetics.

Mentioned in (Main Genizah classmarks):

T-S Ar.11.7; T-S Ar.11.160; T-S Ar.38.21; T-S Ar.39.191; T-S Ar.40.111; T-S Ar.40.160; T-S Ar.42.22; T-S Ar.43.81; T-S Ar.43.112; T-S Ar.43.231; T-S Ar.43.238; T-S Ar.43.270; T-S Ar.43.312; T-S Ar.44.13; T-S Ar.45.20; T-S Ar.45.26; T-S Ar.45.33; T-S Ar.45.56; T-S AS 178.24; T-S AS 182.222; T-S AS 182.298; T-S NS 90.54; T-S NS 90.60; T-S NS 222.36; T-S NS 222.66; T-S NS 222.67; T-S NS 222.68; T-S NS 222.70; T-S NS297.115; T-S NS222.206; T-S NS 305.107; T-S NS 306.42.

### *Murabbā*

Description:

Jam; fruits boiled in sugar.

Mentioned in (Main Genizah classmarks):

T-S Ar.39.91; T-S Ar.41.116; T-S Ar.42.35; T-S Ar.43.270; T-S Ar.45.33; T-S AS 178.260; T-S NS 297.17.

### *Naṭūl*

Description:

General name for liquid medication, fomentation, warm compound.

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<sup>6</sup> Waines.

Mentioned in (Main Genizah classmarks):

T-S Ar.11.19; T-S Ar.39.191; T-S Ar.40.49; T-S Ar.41.66; T-S Ar.42.167;  
T-S Ar.43.88; T-S Ar.43.251; T-S Ar.44.13; T-S Ar.44.130; T-S AS 182.170;  
T-S AS 183.312; T-S NS 90.54.

### *Qayrūṭī*

Description:

Greek name, plaster or ointment for wounds made of olive oil, wax and sometime rose oil.

Mentioned in (Main Genizah classmarks):

T-S Ar.44.153; T-S NS 222.20; T-S Or.1080.2.74.

### *Qurs*

Description:

General name for medical pills.

Mentioned in (Main Genizah classmarks):

T-S Ar.38.40; T-S Ar.38.78; T-S Ar.39.211; T-S Ar.31.228; T-S Ar.31.450;  
T-S Ar.41.116; T-S Ar.41.138; T-S Ar.42.29; T-S Ar.43.6; T-S Ar.43.43;  
T-S Ar.43.95; T-S Ar.43.98; T-S Ar.43.270; T-S Ar.43.291; T-S Ar.43.338;  
T-S Ar.44.57; T-S Ar.44.91; T-S Ar.44.205; T-S Ar.44.208; T-S Ar.45.33;  
T-S Ar.45.40; T-S Ar.45.45; T-S AS 177.407; T-S AS 178.49; T-S AS  
179.47; T-S AS 179.80; T-S AS 179.302; T-S AS 184.34; T-S AS 184.234;  
T-S AS 184.294; T-S NS 90.47; T-S NS 90.52; T-S NS 90.74; T-S NS  
222.31; T-S NS 222.74; T-S NS 224.181; T-S NS 264.86; T-S NS 297.48;  
T-S NS 305.116; T-S NS 306.4; T-S NS 306.7; T-S Or.1080.3.39.

### *Qūqīya*

Description:

Compound pills.

Mentioned in (Main Genizah classmarks):

T-S Ar.43.206; T-S Ar.44.130; T-S Ar.45.26; T-S Ar.45.33; T-S AS 182.37;  
T-S NS 90.7; T-S NS 222.65.



*Rubb, rubūb*

## Description:

General name for jams or syrups made out of fruits; inspissated juice of fruit. Thick residuum of fruit after it has been pressed and cooked. Important foodstuff and was used as medicines.

Mentioned in (Main Genizah classmarks):

T-S Ar.41.47; T-S Ar.41.123; T-S Ar.41.136; T-S Ar.44.77; T-S Ar.44.101. T-S Ar.44.129; T-S Ar.44.149; T-S Ar.44.208; T-S AS 177.407; T-S AS 179.47; T-S NS 34.16.

*Rāmik*

## Description:

Astringent (tannin), which is made out of pomegranate peels or gall-nuts. Similar to “sukk”.<sup>7</sup>

Mentioned in (Main Genizah classmarks):

T-S AS 179.47; T-S NS 164.62; T-S NS 164.152; T-S Or.1080.3.39.

*Safūf*

## Description:

Solid medication, usually finely ground or powdered. Made from various crushed ingredients such as lavender flowers, fennel, anise, liquorice, or mastic, blended with sugar to produce a powder that was administered at bedtime. Among its supposed effects were clearing the head and the stomach, drying the lungs, and soothing a moist cough.<sup>8</sup>

Mentioned in (Main Genizah classmarks):

T-S Ar.38.76; T-S Ar.40.45; T-S Ar.40.87; T-S Ar.40.155; T-S Ar.40.180; T-S Ar.41.37; T-S Ar.41.137; T-S Ar.43.291; T-S Ar.44.205; T-S Ar.45.26; T-S Ar.45.33; T-S Ar.45.45; T-S AS 177.407; T-S Or.1080.3.39.

*Sakanjabīn*

## Description:

Oxymel—syrup made of honey and vinegar

<sup>7</sup> Maimonides, Glossaire, No. 290.

<sup>8</sup> Waines.

Mentioned in (Main Genizah classmarks):

T-S NS 223.82-83; T-S AS 155.277; T-S Ar.39.462; T-S AS 144.104; T-S AS 144.105; T-S Ar.40.130; T-S Ar.43.71; T-S Ar.41.44; T-S Ar.11.11; T-S NS 306.4; T-S NS 306.74; T-S AS 176.277; T-S AS 177.456.

### *Sharāb*

Description:

General name for diverse medical liquids (syrup), made out of a wide range of fruits and vegetables, most of which were sweetened with sugar. Typically, the ingredients were placed together in a pot covered with water, and cooked until their “strength” was extracted. Then variant methods were employed to blend the juices pre-extracted from various plants. Sometimes the water was reduced to half its original amount. The recommended doses were taken by blending one part of the potion to one or more parts warm water.<sup>9</sup>

Mentioned in (Main Genizah classmarks):

T-S Ar.42.44; T-S Ar.43.320; T-S Ar.43.338; T-S Ar.44.13; T-S Ar.44.37; T-S Ar.44.57; T-S Ar.44.69; T-S Ar.44.77; T-S Ar.44.79; T-S Ar.44.90; T-S Ar.44.129; T-S Ar.44.130; T-S Ar.44.218; T-S Ar.45.10; T-S Ar.45.21; T-S AS 177.40; T-S AS 177.318; T-S AS 178.81; T-S AS 178.288; T-S AS 179.226; T-S AS 179.251; T-S AS 182.37; T-S AS 183.271; T-S AS 183.355; T-S AS 183.356; T-S AS 184.27; T-S AS 184.152; T-S NS 31.6; T-S NS 90.27; T-S NS 90.51; T-S NS90.52; T-S NS 90.60; T-S NS 222.21; T-S NS 222.22; T-S NS 222.28; T-S NS 222.60; T-S NS 222.67; T-S NS 222.69; T-S NS 222.70; T-S NS 223.82; T-S NS 223.83; T-S NS 224.181; T-S NS 224.226; T-S Or.1080.2.74; T-S Or.1080.3.9; T-S Or.1080.3.39; T-S Or.1080.4.24; T-S Or.1080.13.12; T-S Or.1080.13.34; T-S Or.1081.J.71.

### *Sanūnāt*

Description:

Tooth cleansing powder.

Mentioned in:

T-S AS 182.77.

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<sup>9</sup> Waines.

*Shiyāf, 'ashyāf*

## Description:

General name for eye medicines, collyrium.

Mentioned in (Main Genizah classmarks):

T-S Ar.38.9; T-S Ar.38.68; T-S Ar.38.124; T-S Ar.39.124; T-S Ar.39.367; T-S Ar.39.467; T-S Ar.39.478; T-S Ar.41.24; T-S Ar.41.40; T-S Ar.42.144; T-S Ar.43.76; T-S Ar.43.101; T-S Ar.41.143; T-S Ar.41.166; T-S Ar.41.180; T-S Ar.41.201; T-S Ar.41.206; T-S Ar.44.1; T-S Ar.44.13; T-S Ar.44.30; T-S Ar.44.69; T-S Ar.44.150; T-S Ar.45.20; T-S Ar.45.26; T-S Ar.45.32; T-S Ar.45.33; T-S Ar.45.41; T-S Ar.45.45; T-S AS 178.288; T-S AS 180.76; T-S AS 180.163; T-S NS 90.59; T-S NS 222.18; T-S NS 222.42; T-S NS 222.60; T-S NS 297.17; T-S NS 297.232; T-S NS 297.293; T-S NS 306.168; T-S NS 327.87; T-S Or.1080.2.74.

*Sukk*

## Description:

Confection, oriental aromatic remedy composed of date juice, gallnut and Indian astringent drugs.<sup>10</sup>

Mentioned in (Main Genizah classmarks):

T-S Ar.40.1; T-S Ar.42.199; T-S Ar.43.172; T-S Ar.43.201; T-S Ar.43.338; T-S Ar.44.121; T-S Ar.44.205; T-S Ar.45.28; T-S Ar.45.30; T-S Ar.45.31.

*Ṭilā'*

## Description:

Medical ointment.

Mentioned in (Main Genizah classmarks):

T-S Ar.42.68; T-S Ar.45.31; T-S AS 180.16; T-S AS 182.170; T-S AS184.3; T-S AS 184.28, T-S NS 90.47; T-S NS90.66; T-S NS 222.67; T-S NS 222.70; T-S NS 305.107.

*Ṭīb*

## Description:

General name for drug or perfume.

<sup>10</sup> Maimonides, Glossaire, No. 290.

Mentioned in (Main Genizah classmarks):

T-S Ar.43.95; T-S Ar.43.192; T-S Ar.45.30; T-S AS 177.17; T-S AS 184.234.

### *Tiryāq*

Description:

The word theriac is similar in Greek, Latin, Hebrew and Arabic. In English theriac was once known as 'treacle'.<sup>11</sup> Theriac is a preparation (serum), which used to be made of the venom of snakes and scorpions and other poisons derived from medicinal plants, inorganic materials, and animal parts. During the Middle Ages special and complex kinds of theriac were known.<sup>12</sup> It was used in Galenic medicine in Europe until the 18th century and in the East until the 20th century.<sup>13</sup>

Mentioned in (Main Genizah classmarks):

T-S Ar.38.78; T-S Ar.40.111; T-S Ar.41.116; T-S Ar.41.130; T-S Ar.42.39; T-S Ar.42.199; T-S Ar.44.77; T-S Ar.45.28; T-S AS 176.277; T-S AS 173.215; T-S AS 144.165; T-S AS 184.152; T-S NS 90.30; T-S NS 306.172; T-S NS 327.70.

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<sup>11</sup> Watson, Theriac.

<sup>12</sup> Detailed history and medical description in Watson, Theriac; Amar, Theriac..

<sup>13</sup> Schreiber, pp. 23-26; Berman, pp. 5-7.

## APPENDIX FOUR

### FOODSTUFFS

This appendix presents several foodstuffs out of the wide variety that were eaten by medieval people, as mentioned in the Genizah fragments. It forms a part of this book, which deals with medicinal substances, owing to the importance of food for health in the Arab world in the Middle Ages. The *regimen sanitatis* (nowadays preventive medicine) was one of the main pillars of ancient and medieval medicine, that is, healthy nutrition alongside treatment with medicinal substances (simples) and compound drugs.<sup>14</sup>

Our identification of some of the foodstuffs was a lengthy and extremely complicated process, in which various dictionaries were used (on the identification process and literature consulted, see part A, Chapter 3).

The foodstuffs' names, descriptions and selective class marks in which they are mentioned, without distinction between practical and theoretical information, are presented in the table. However, most of the information comes from medical and pharmacological literature, and therefore is theoretical.

Table 21 Foodstuffs

Arabic	Description	Selected Classmark
'ajwāl	Pressed preserved wet dates	T-S Ar.41.37; T-S NS 306.115
'itriya dibs	Noodle Dates concentrate sweet liquid until 12th century (made of grapes later)	T-S Or.1081.1.21 T-S Ar.43.312

<sup>14</sup> See for example the title of Ibn al-Bayṭār's book *Kitāb al-Jāmi' li-Mufradāt al-Adwiya wa-l-Aghdhiya*—the book of the simple medicines and the foodstuff—Ibn al-Baytar, al-Jami.

Table 21 (*cont.*)

Arabic	Description	Selected Classmark
fānīd	Different sweets (GN)	T-S Ar.11.13; T-S Ar.41.81; T-S Ar.41.114; T-S Ar.41.123; T-S Ar.42.199; T-S Ar.44.37; T-S Ar.44.57; T-S Ar.44.86; T-S Ar.44.91; T-S Ar.45.28; T-S Ar.45.53; T-S NS 90.27; T-S NS 90.61; T-S NS 90.80; T-S NS 164.80
fuqqā'a	Drink made out of barley (similar to beer)	T-S Ar.40.104
fuṭr	Mushroom (GN)	T-S Ar.41.13; T-S Ar.44.77; T-S AS 177.456
fatīt	Soup served with pieces of bread.	T-S Ar.41.96
fawākih	Fruits (GN)	T-S Ar.41.47; T-S Ar.41.116; T-S Ar.41.136; T-S Ar.42.73; T-S Ar.44.90; T-S Ar.44.101; T-S Ar.44.129; T-S Ar.44.130; T-S Ar.44.208; T-S AS 181.195; T-S Or.1080.13.43
ḥalāwa	Sweets (GN), halva (used as aphrodisiac)	T-S Ar.44.201; T-S Ar.44.208; T-S NS 164.159
harisa	1. Dish made of meat and ground wheat. 2. Sweet made out of flour, sugar and butter (in Egypt)	T-S Ar.44.95; T-S Or.1081.J.71;
ḥasw, ḥasā'	Soup, porridge	T-S Ar.44.67; T-S Ar.44.91; T-S Ar.45.45
ḥawrī	White bread	T-S Ar.11.13; T-S Ar.38.40; T-S Ar.44.91
ḥawā'ij	Compound of spices such as cumin, pepper and cardamom	T-S Ar.30.65; T-S Ar.42.20; T-S AS 177.139; T-S Ar.43.338
ruqāqa	Thin crispy bread or biscuit	T-S Or. J91
kam'a	Truffles	T-S Ar.38.76; T-S AS 177.456; T-S Or.1080.13.33
khabīša	1. Dish made out of vegetables. 2. Sweets made out of dates and butter.	T-S Or.1081.J.71; T-S Or.1081.J.71
khamīra; ḥamīra	Leaven dough—used as topical application—fermented liquid, treats haemorrhoids	T-S Ar.44.181; T-S Ar.30.99; T-S AS 182.222; T-S AS 184.234; T-S Ar.39.450; T-S Ar.39.487; T-S Ar.43.317; T-S NS 279.57
khubz	Bread	T-S Ar.39.151; T-S Ar.41.47; T-S Ar.41.96; T-S Ar.41.128; T-S Ar.41.134; T-S Ar.45.45
kunāfa	Sweet noodle casserole	T-S Or.1081.J.71

Table 21 (*cont.*)

Arabic	Description	Selected Classmark
laban, ḥalīb	Milk or yoghurt	T-S Ar.40.121; T-S Ar.41.47; T-S Ar.41.75; T-S Ar.41.96; T-S Ar.42.44; T-S Ar.44.77; T-S Ar.44.90; T-S Ar.45.19; T-S AS 180.135; T-S AS 182.82; T-S NS 31.6; T-S NS 222.41; T-S NS 228.14
muḍīra	Dish made out of meat, yoghurt etc.	T-S Ar.44.79
maraq	Different kinds including chicken soup	T-S Ar.44.57; T-S Ar.44.32; T-S Ar.44.77; T-S Or.1080.13.33
muhallabiyya	Desert, similar to pudding	T-S Or.1081.J.71
murī	Gravy, sauce for dipping the bread	T-S Ar.44.51; T-S Ar.44.130; T-S NS 90.52
nabīdh	Alcoholic drink (GN),	T-S Ar.38.40; T-S Ar.41.123; T-S Ar.44.79; T-S Ar.45.19; T-S Ar.45.26; T-S Ar.45.31; T-S NS 90.60; T-S Or.1080.6.15
qaṭāʿif	Sweet made of fried sugar, almonds, nuts	T-S Ar.43.95
sikbāj	Dish or soup made out of meat, vinegar etc.	T-S Ar.44.149; T-S NS 90.60; T-S Or.1081.J.71
samid	Semolina, finely sifted flour	T-S Ar.41.96; T-S Ar.96.128; T-S AS 182.308
sawīq	Ground wheat and barley porridge	T-S Ar.40.112; T-S Ar.38.78; T-S Ar.41.47; T-S Ar.41.137; T-S Ar.43.225; T-S Ar.44.32; T-S Ar.44.101; T-S Ar.44.130; T-S Ar.44.187; T-S Ar.44.205; T-S NS 164.62; T-S NS 297.39; T-S AS 179.47; T-S Or.1080.2.74
shaʿriyya	Noodles	T-S Ar.35.82
ṭabikh	Cooked food	T-S AS 181.195
zalābiya	Pancake, "latke"	T-S Ar.43.95
zīrbāj	Sweet made of sugar and raisins	T-S Ar.44.57; T-S AS 178.122

APPENDIX FIVE

PRESCRIPTIONS, LISTS OF *MATERIA MEDICA* AND  
NOTEBOOKS

**General abbreviation:**

**A** – Arabic

**JA** – Judeo-Arabic

**L** – Language

Table 22 List of prescriptions discovered in the Genizah

**Abbreviations:**

**PF** – Prescription full

**PP** – Prescription part

<b>Class mark</b>	<b>PF/PP</b>	<b>L</b>
T-S 12.33	PF	JA
T-S 16.291	PF	JA
T-S 13J6.14	PF	A
T-S 8J14.3	PF	JA
T-S 8J15.20	PF	JA
T-S Ar.11.22	PF	A
T-S Ar.20.16	PP	A
T-S Ar.29.137	PP	A
T-S Ar.30.16	PF	JA
T-S Ar.30.227	PP	A
T-S Ar.30.291	PP	A
T-S Ar.30.305	PF	JA
T-S Ar.30.310	PP	A
T-S Ar.30.65	PF	JA
T-S Ar.30.99	PF	A
T-S Ar.34.150	PF	A
T-S Ar.34.159	PP	JA
T-S Ar.34.217	PP	A
T-S Ar.34.239	PF	A
T-S Ar.34.305	PF	A
T-S Ar.35.248	PP	JA
T-S Ar.35.295	PP	A
T-S Ar.35.363	PF	A



Table 22 (cont.)

<b>Class mark</b>	<b>PF/PP</b>	<b>L</b>
T-S Ar.35.59	PP	JA
T-S Ar.35.78	PP	JA
T-S Ar.35.82	PP	JA
T-S Ar.38.29	PP	A
T-S Ar.39.184	PP	A
T-S Ar.39.211	PF	A
T-S Ar.39.244	PP	A
T-S Ar.39.274	PF	A
T-S Ar.39.318	PP	A
T-S Ar.39.335	PF	A
T-S Ar.39.451	PF	A
T-S Ar.39.458	PF	A
T-S Ar.40.141	PF	A
T-S Ar.40.53	PF	A
T-S Ar.40.87	PF	A
T-S Ar.41.110	PF	A
T-S Ar.41.125	PF	A
T-S Ar.41.71	PF	A
T-S Ar.41.72	PF	A
T-S Ar.41.81	PF	A
T-S Ar.42.110	PF	A
T-S Ar.42.15	PP	JA,A
T-S Ar.42.152	PF	A
T-S Ar.42.189	PF	A
T-S Ar.42.20	PF	A
T-S Ar.42.60	PF	A
T-S Ar.42.67	PF	A
T-S Ar.43.238	PF	JA
T-S Ar.43.338	PF	JA
T-S Ar.43.47	PF	JA
T-S Ar.43.54	PF	JA
T-S Ar.43.71	PF	JA
T-S Ar.44.162	PF	JA
T-S Ar.44.181	PF	JA
T-S Ar.51.76	PP	A
T-S AS 117.4	PP	A
T-S AS 142.109	PP	JA
T-S AS 146.197	PP	A
T-S AS 147.192	PP	JA
T-S AS 148.22	PF	JA
T-S AS 148.27	PP	A
T-S AS 150.59	PP	JA
T-S AS 151.225	PP	JA

Table 22 (*cont.*)

<b>Class mark</b>	<b>PF/PP</b>	<b>L</b>
T-S AS 151.56	PP	JA
T-S AS 152.34	PF	JA
T-S AS 152.90	PP	JA
T-S AS 153.89	PP	JA
T-S AS 155.277	PF	A
T-S AS 155.365	PF	A, JA
T-S AS 156.272	PP	A
T-S AS 156.335	PP	JA
T-S AS 159.241	PP	JA
T-S AS 161.23	PP	JA
T-S AS 162.185	PP	JA
T-S AS 162.186	PP	JA
T-S AS 169.297	PP	JA
T-S AS 172.25	PP	JA
T-S AS 173.3	PF	JA
T-S AS 176.123	PP	A
T-S AS 176.494	PF	A
T-S AS 177.31	PP	A
T-S AS 177.39	PP	A
T-S AS 177.40	PP	A
T-S AS 177.402	PP	A
T-S AS 177.417	PP	A
T-S AS 177.422	PP	A
T-S AS 178.32	PP	A
T-S AS 178.49	PP	A
T-S AS 179.259	PP	A
T-S AS 179.283	PP	A
T-S AS 180.15	PP	A
T-S AS 180.239	PP	A
T-S AS 181.127	PP	A
T-S AS 182.167	PP	A
T-S AS 182.179	PP	A
T-S AS 182.242	PP	A
T-S AS 182.267	PP	A
T-S AS 182.77	PP	A
T-S AS 183.216	PP	A
T-S AS 214.96	PF	JA
T-S AS 216.200	PP	A
T-S AS 219.163	PP	A
T-S K25.116	PF	JA
T-S K25.212	PF	JA
T-S NS 102.111	PP	A
T-S NS 108.139	PP	A

Table 22 (*cont.*)

<b>Class mark</b>	<b>PF/PP</b>	<b>L</b>
T-S NS 108.28	PP	A
T-S NS 139.31	PP	JA
T-S NS 151.52	PP	JA
T-S NS 164.159	PF	A
T-S NS 164.88	PP	JA
T-S NS 164.98	PP	JA
T-S NS 194.70	PF	JA
T-S NS 218.21	PF	JA
T-S NS 222.34	PF	JA
T-S NS 223.82-83	PF	JA
T-S NS 225.108	PP	JA
T-S NS 265.62	PP	JA
T-S NS 281.158	PP	JP
T-S NS 297.17	PF	A
T-S NS 297.216	PF	A
T-S NS 297.260	PP	A
T-S NS 305.136	PP	A
T-S NS 305.50	PP	A
T-S NS 305.75	PF	A
T-S NS 305.76	PF	A
T-S NS 306.134	PP	A
T-S NS 306.142	PR	A
T-S NS 306.177	PF	A
T-S NS 306.33	PF	A
T-S NS 306.42	PP	JA
T-S NS 306.48	PP	A
T-S NS 326.41	PP	A
T-S NS 327.100	PP	A
T-S NS 327.40	PF	A
T-S NS 327.97	PF	A
T-S NS 66.46	PP	JA
T-S NS 83.28	PP	A
T-S NS 90.65	PP	H
T-S NS 97.55	PP	JA
T-S NS J38	PF	A
T-S Or.1080.1.87	PF	A
T-S Or.1081.1.66	PF	JA
T-S Or.1081.J.39	PF	JA

Table 23 Prescriptions in letters

Class mark	PF/PP	L	L.N	Ble.	M.M
T-S Ar.30.286	F	JA	39	1	29
T-S Ar.46.97	P	JA	5,8	2	2,1

Table 24 *Materia medica* lists discovered in the Genizah**Abbreviations:**

LF – Prescription full

LP – Prescription part

Class mark	LF/LP	L
T-S Ar.11.16	LP	JA
T-S Ar.29.179	LP	A
T-S Ar.30.274	LF	JA
T-S Ar.34.146	LP	A
T-S Ar.34.341	LP	A
T-S Ar.35.137	LP	A
T-S Ar.35.227	LP	JA
T-S Ar.35.229	LF	A
T-S Ar.35.252	LF	JA
T-S Ar.35.326	LP	A
T-S Ar.35.327	LP	A
T-S Ar.35.328	LP	A
T-S Ar.35.344	LP	A
T-S Ar.35.366	LF	A
T-S Ar.35.388	LF	A
T-S Ar.35.82	LP	JA
T-S Ar.39.136	LF	A
T-S Ar.39.139	LP	A
T-S Ar.39.307	LF	A
T-S Ar.39.450	LF	A
T-S Ar.39.451	LF	A
T-S Ar.39.487	LF	A
T-S Ar.42.15	LP	JA
T-S Ar.43.315	LF	JA
T-S Ar.43.317	LF	JA
T-S Ar.43.6	LF	JA
T-S Ar.51.53	LP	A
T-S AS 145.365	LF	JA
T-S AS 152.131	LP	JA
T-S AS 153.51	LP	JA

Table 25 (cont.)

<b>Class mark</b>	<b>F/P</b>	<b>L</b>
T-S AS 169.199	LP	JA
T-S AS 176.151	LP	A
T-S AS 176.22	LF	JA
T-S AS 177.139	LP	A
T-S AS 177.200	LP	A
T-S AS 177.227	LP	A
T-S AS 177.9	LP	JA
T-S AS 179.132	LP	A
T-S AS 179.56	LF	A
T-S AS 179.80	LP	JA
T-S AS 180.189	LP	A
T-S AS 180.199	LP	A
T-S AS 180.32	LP	A
T-S AS 181.109	LP	A
T-S AS 181.193	LP	A
T-S AS 182.222	LP	A
T-S AS 182.233	LP	A
T-S AS 182.258	LP	A
T-S AS 182.3	LP	A
T-S AS 182.73	LP	A
T-S AS 182.99	LP	A
T-S AS 183.159	LP	JA
T-S AS 184.187	LF	A
T-S AS 184.234	LF	A
T-S AS 184.321	LP	A
T-S AS 184.34	LP	A
T-S NS 164.12	<b>LF</b>	JA
T-S NS 224.62	<b>LF</b>	JA
T-S NS 224.65	<b>LF</b>	JA
T-S NS 264.80	LP	JA
T-S NS 264.86	LP	JA
T-S NS 279.57	LP	JA
T-S NS 279.57	<b>LF</b>	JA
T-S NS 305.38	LF	A
T-S NS 305.69	<b>LF</b>	A
T-S NS 306.106	LF	A
T-S NS 306.115	<b>LF</b>	A
T-S NS 321.49	<b>LF</b>	A
T-S NS 325.127	<b>LF</b>	JA
T-S Or.1081.J.71	LP	JA

Table 25 Lists of notebooks revealed in the Genizah and their basic descriptions

**Abbreviations:**

<b>Class mark</b>	<b>L</b>
T-S K14.32	H
T-S K25.83	JA
T-S Ar.11.11	JA
T-S Ar.35.226	A
T-S Ar.39.20	A
T-S Ar.39.367	JA
T-S Ar.43.42	JA
T-S Ar.43.320	JA
T-S Ar.44.30	JA
T-S Ar.44.182	JA
T-S Ar.44.187	JA
T-S Ar.44.222	JA
T-S Ar.45.11	JA
T-S Ar.45.21	JA
T-S Ar.45.30	JA
T-S Ar.45.40	JA
T-S Ar.50.171	JA
T-S AS 147.74	JA
T-S AS 147.204	JA
T-S AS 148.28	JA
T-S AS 148.111	JA
T-S AS 150.136	JA
T-S AS 159.235	JA
T-S AS 160.197	JA
T-S AS 163.199	JA
T-S AS 179.262	A
T-S Or.1080.7.17	JA
T-S Or.1081.1.78	JA
T-S NS 90.64	JA
T-S NS 90.73	JA
T-S NS 90.74	JA
T-S NS 91.6	JA+ H
T-S NS 163.116	JA
T-S NS 190.26	JA
T-S NS 210.29	JA
T-S NS 224.149	JA
T-S NS 224.226	JA
T-S NS 264.27	JA
T-S NS 224.226	JA

Table 25 (*cont.*)

<b>Class mark</b>	<b>L</b>
T-S NS 265.27	JA+ H
T-S NS 297.48	JA
T-S NS 314.9	JA
T-S NS 314.6	JA
T-S NS 322.31	JA
T-S NS 324.128	JA
T-S NS 339.62	JA
T-S NS J89	JA
T-S NS J543	JA

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*HE*—Hebrew Encyclopaedia

*PPTS*—Palestine Pilgrims Text Society, London 1887–1897

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عراقي زوردر و حلا صناعه  
 اربعه عمود هلكي متقال فرغمتل فضه لطيمه اخضر  
 والا يامس حسيه لدم برص مالحه و ربع يوم و ليلة و ثلثي  
 على ناره اديا الى ان يصعد الطبق و يورث و يثني الي ستر  
 رطلين و يوزن لرقوم و يلق على مالان ثور ثلثه اولان و يانوق ثلثه  
 ماورد بلوكي ثلثه اولان و يوزن لرقوم و يلق عليه خيره حبه نجاج  
 و خميره سفوف و خيره زمان صوا و حمزه حاض من كل واحد نصف  
 رطل و ان و صيرت اسياه الفولاد من السكر اربعه ارباط و حرك  
 و يوزن لرقوم و عند نزول من على النار يضر فيه لولو غير مستوي و لا يورد  
 مغسول من كل واحد متقال زعفران مصوم و فرغمتل و ورق  
 فضه من كل واحد ربع متقال مسهل عال عراقى و مرطبان حبه ثلثه  
 ماورد و قطط حبه و ربع و يستعمل سمرات اسفنج برورد  
 من مسور او ميان منفع من سلا الكبر و الطحال و ينفع من ضعف  
 المعده و الحماض و البلغم و الكليه و يبرد المزاج و يطبخ القاصه و يوزن  
 لرقوم و يوزن لرقوم و النسر من كل واحد حبه و يوزن لرقوم و يوزن  
 عشم ينفع الجميع و رطل و نصف حبه و يوزن لرقوم و يوزن لرقوم و يوزن  
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 سمرات حبه من الاوسن و كبريتان

عراقي زوردر و حلا صناعه  
 اربعه عمود هلكي متقال فرغمتل فضه لطيمه اخضر  
 والا يامس حسيه لدم برص مالحه و ربع يوم و ليلة و ثلثي  
 على ناره اديا الى ان يصعد الطبق و يورث و يثني الي ستر  
 رطلين و يوزن لرقوم و يلق على مالان ثور ثلثه اولان و يانوق ثلثه  
 ماورد بلوكي ثلثه اولان و يوزن لرقوم و يلق عليه خيره حبه نجاج  
 و خميره سفوف و خيره زمان صوا و حمزه حاض من كل واحد نصف  
 رطل و ان و صيرت اسياه الفولاد من السكر اربعه ارباط و حرك  
 و يوزن لرقوم و عند نزول من على النار يضر فيه لولو غير مستوي و لا يورد  
 مغسول من كل واحد متقال زعفران مصوم و فرغمتل و ورق  
 فضه من كل واحد ربع متقال مسهل عال عراقى و مرطبان حبه ثلثه  
 ماورد و قطط حبه و ربع و يستعمل سمرات اسفنج برورد  
 من مسور او ميان منفع من سلا الكبر و الطحال و ينفع من ضعف  
 المعده و الحماض و البلغم و الكليه و يبرد المزاج و يطبخ القاصه و يوزن  
 لرقوم و يوزن لرقوم و النسر من كل واحد حبه و يوزن لرقوم و يوزن  
 عشم ينفع الجميع و رطل و نصف حبه و يوزن لرقوم و يوزن لرقوم و يوزن  
 ينفع معال الكليه و يوزن لرقوم و يوزن لرقوم و يوزن لرقوم و يوزن  
 الي لطل لرقوم و يوزن لرقوم و يوزن لرقوم و يوزن لرقوم و يوزن  
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 سمرات حبه من الاوسن و كبريتان

Figure 1 - A page from al-Kühin al-'Aṭṭār's Minhāj al-dukkān wa-dustūr al-'a'yān fī 'a mā'l wa-tarākīb al-'adwiya al-nāfi'a lil-insān on syrups, found in the Genizah (T-S Ar.40.91)



Figure 2 – A fragment of a notebook on dentistry (T-S Or.1080.7.17)



Figure 3 - A letter from Maimonides to his disciple Tobias with a recipe for his headache (T-S Ar.30.286).



Figure 4 - Prescription for a recipe written in Judaeo-Arabic, opening and closing with benedictions in Arabic (T-S Ar.30.305)



Figure 5 - Prescription consisting of two similar recipes, the lower in Judaeo-Arabic and the upper in Arabic (T-S AS 155.365).

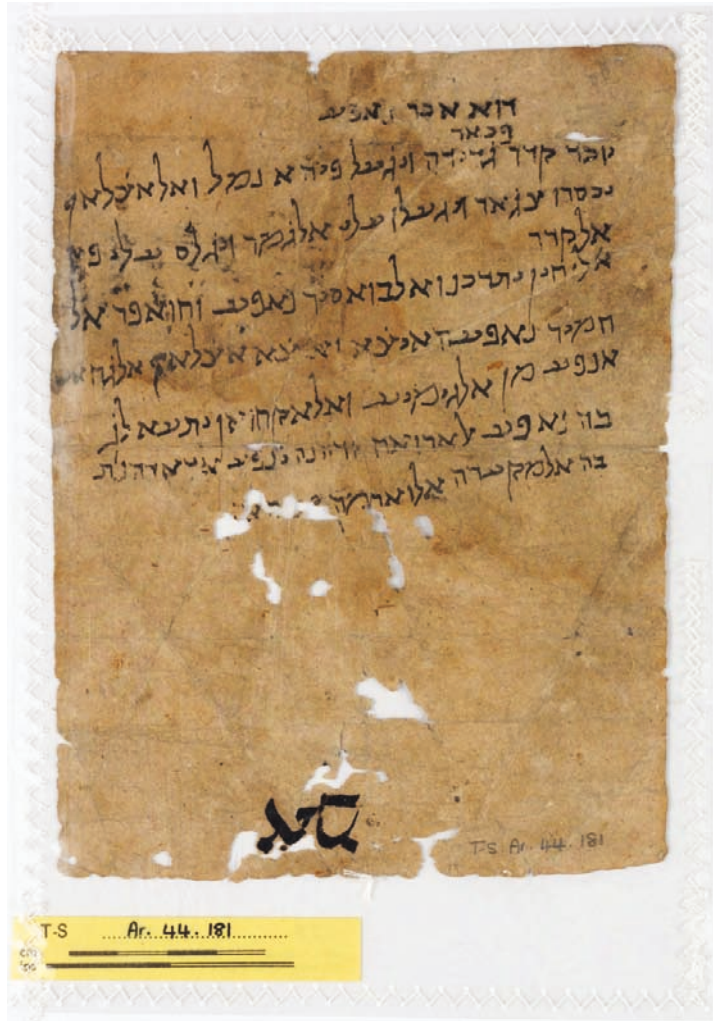


Figure 6 – Prescription for the treatment of haemorrhoids (T-S Ar.44.181).

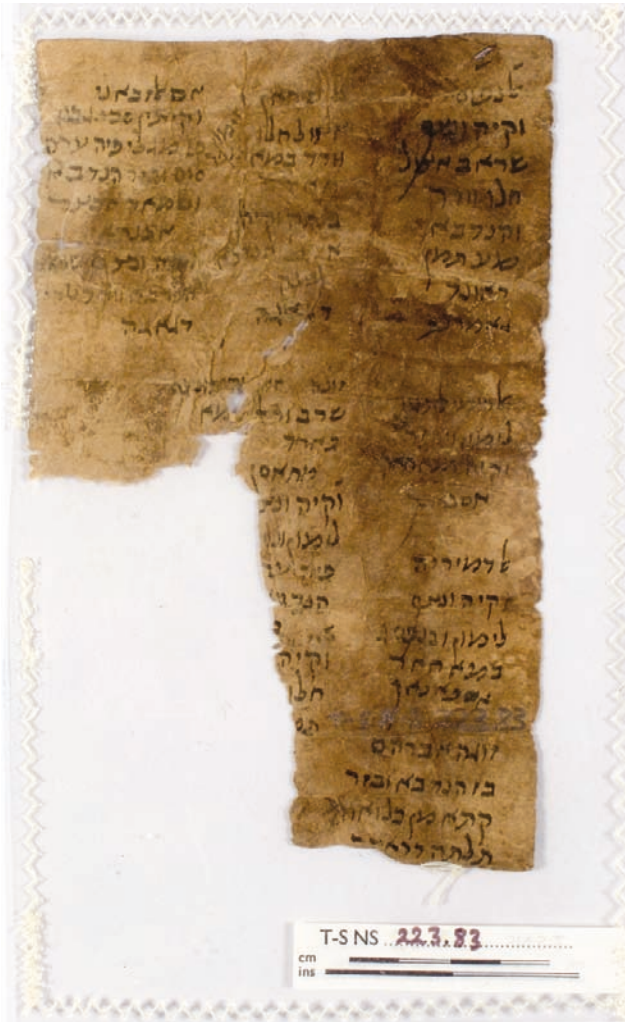


Figure 7 - Family prescription listing 12 patients, some related (T-S NS 223.83)





Figure 8 - Fragment identified as a part of Ibn al-Bayān's *al-Dustūr al-bīmāristānī* (T-S Ar.43.270).



Figure 9 - Prescription for the treatment of ancient ulcer, chancre, and some eye ailments (T-S AS 161.23)



Figure 10 – List of simples and their quantities, written in Judaeo-Arabic, including weights or prices in Coptic numerals (T-S Ar.30.274).





Figure 12 – One of a few prescriptions that mentions myrobalan (T-S Ar.43.338).



Figure 13 - Dry decoction of Aloe, *Aloe sp.* (Liliaceae)



Figure 14 - Crystals of alum, *Stypteria*



Figure 15 – Resin of bdellium, *Commiphora mukul* (Bursaceae)



Figure 16 – Seeds of bottle gourd, *Lagenaria vulgaris* (Cucurbitaceae)



Figure 17 – Dried flowers of borage, *Anchusa italica* (Boraginaceae)



Figure 18 – Leaves and oil of camphor, *Cinnamomum camphora* (Lauraceae)





Figure 19 – Fruits of cardamom, *Elettaria cardamomum* (Zingiberaceae)



Figure 20 – Seeds and root of carrot, *Daucus carota* (Apiaceae)



Figure 21 – Leaves of cassia, *Cassia acutifolia* (Fabaceae)



Figure 22 – Hard cheese; cattle product, *Bos taurus* (Bovidae)



Figure 23 – Seeds of chate melon, *Cucumis melo var. chate* (Cucurbitaceae)



Figure 24 – Samples of white clay [earth, bole]

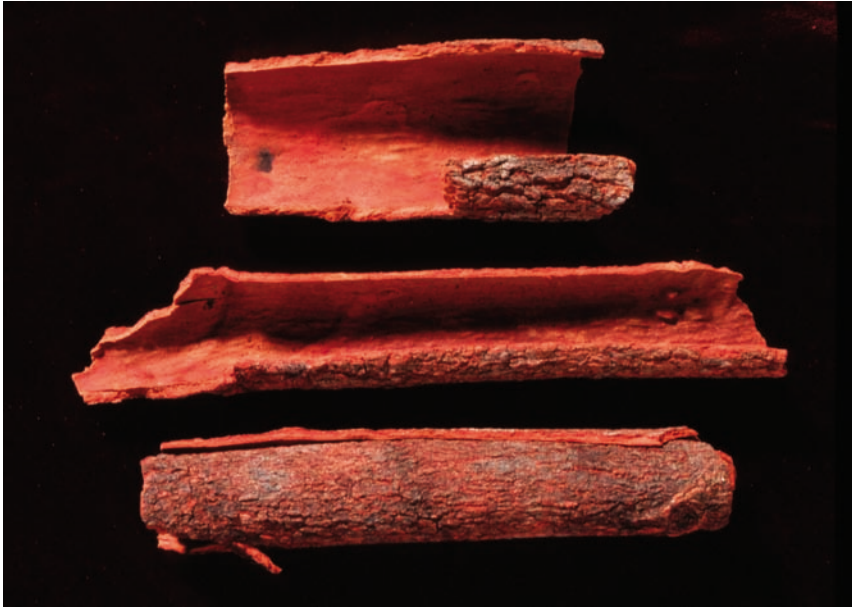


Figure 25 – Bark of cinnamon, *Cinnamomum cassia*, (Lauraceae)

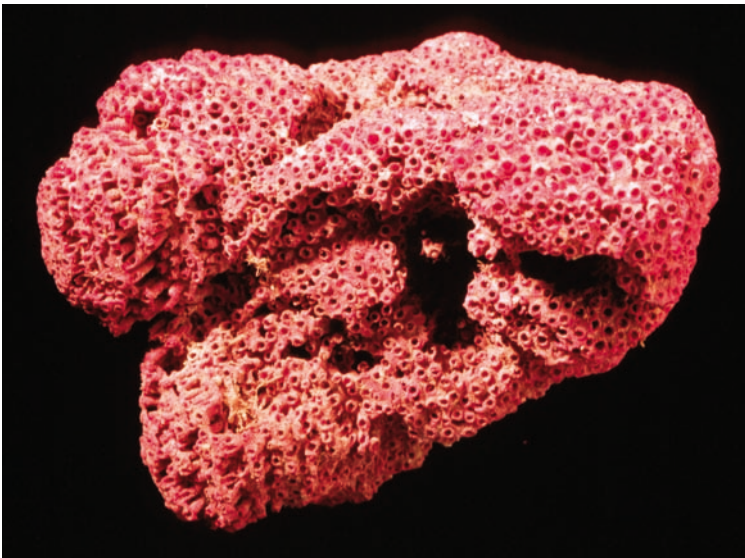


Figure 26 – Red coral, *Tubipora musica* (Coelenterata System)



Figure 27- Seeds of coriander, *Coriandrum sativum* (Apiaceae)



Figure 28 - Resin of frankincense [olibanum], *Boswellia carteri* (Burseraceae)



Figure 29 - Gum Arabic; resin of *Acacia nilotica* (Mimosaceae)



Figure 30 - Leaves, fruits and powder of henna, *Lawsonia inermis, alba* (Lythraceae)



Figure 31 – Fruits of jujube, *Ziziphus vulgaris* (Rhamnaceae)



Figure 32 – Crystals and powder of galena, *Plumbum sulphidum* (PbS)



Figure 33 – Resin of lentisk, *Pistacia lentiscus* (Anacardiaceae)



Figure 34 – Roots of liquorice, *Glycyrrhiza glabra* (Fabaceae)





Figure 35 – Fruits of long pepper, *Piper longum* (Piperaceae)



Figure 36 - Mollusc [Operculum of marine gastropods]



Figure 37 – Fruits of yellow myrobalan (cherry plum), *Terminalia citrina* (Combretaceae)

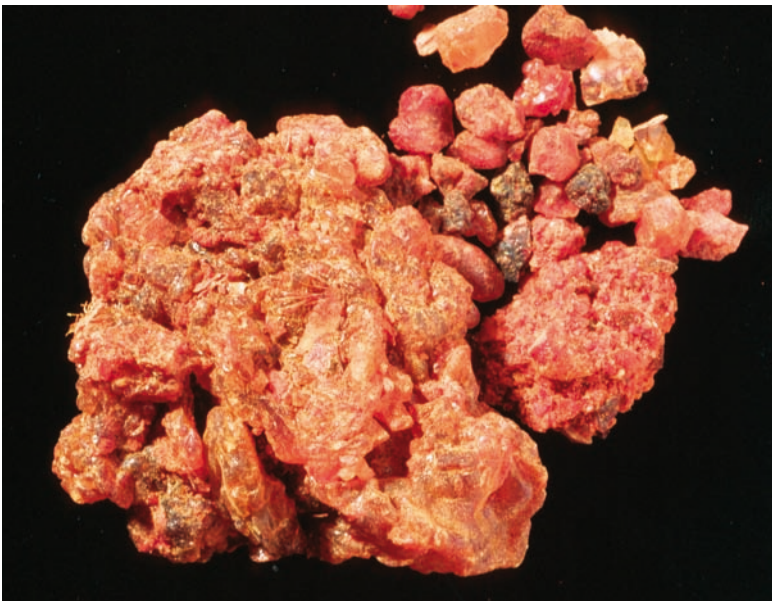


Figure 38 – Resin of myrrh, *Commiphora myrrha* (Burseraceae)



Figure 39 - Oak gall, *Quercus* sp. (Fagaceae)



Figure 40 - Fruits of peony, *Paeonia* sp. (Paeoniaceae)



Figure 41 – Fruits of pepper (black pepper), *Piper nigrum* (Piperaceae)



Figure 42 – Fruits of perfumed cherry, *Prunus mahaleb* (Rosaceae)



Figure 43 – Roots of rhubarb, *Rheum* sp. (Polygonaceae)



Figure 44 – Flowers of rose (dog rose), *Rosa canina* (Rosaceae)



Figure 45 - Common Rue, *Ruta graveolens* (Rutaceae)



Figure 46 -Stigmas of saffron, *Crocus sativus* (Iridaceae) [on left side] and imitations sold in markets today [right side]



Figure 47 – Sarcocolla [resin], *Astragalus sarcocolla* (Fabaceae)



Figure 48 – Fruits of sebesten, *Cordia myxia* (Boraginaceae)



Figure 49 – Roots of spikenard [nard, nardus root, musk root, Indian spikenard], *Nardostachys jatamansi* (Valerianaceae)

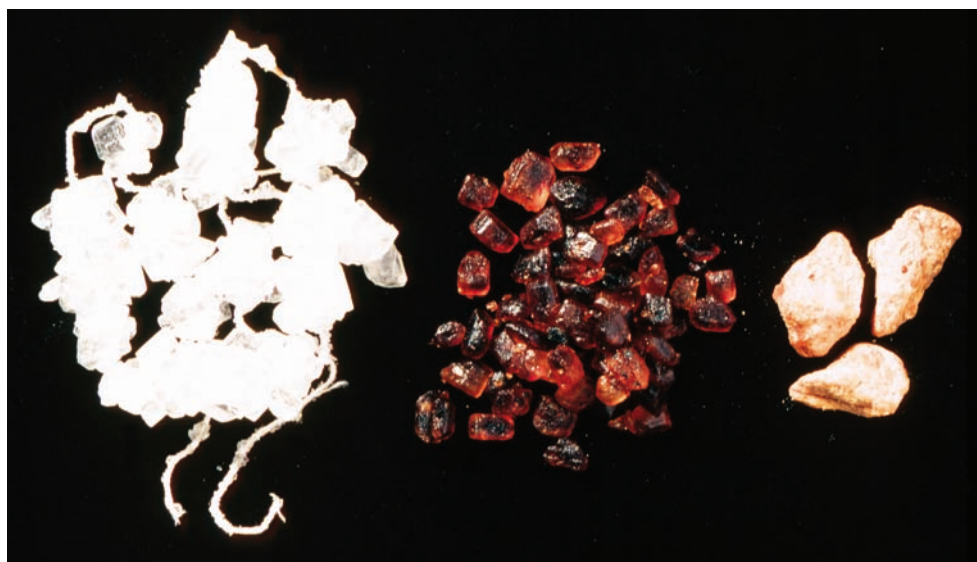


Figure 50 – Crystals of cane sugar, *Saccharum officinarum* (Poacea)



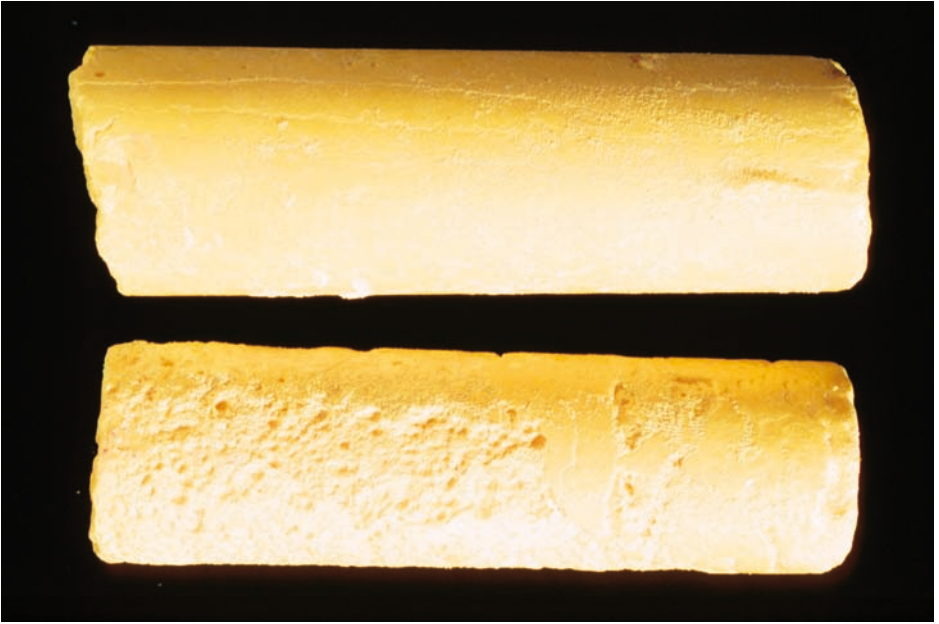


Figure 51 – Cylinders of natural Sulphur (S)



Figure 52 – Leaves and seeds of sweet violet, *Viola odorata* (Violaceae)

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